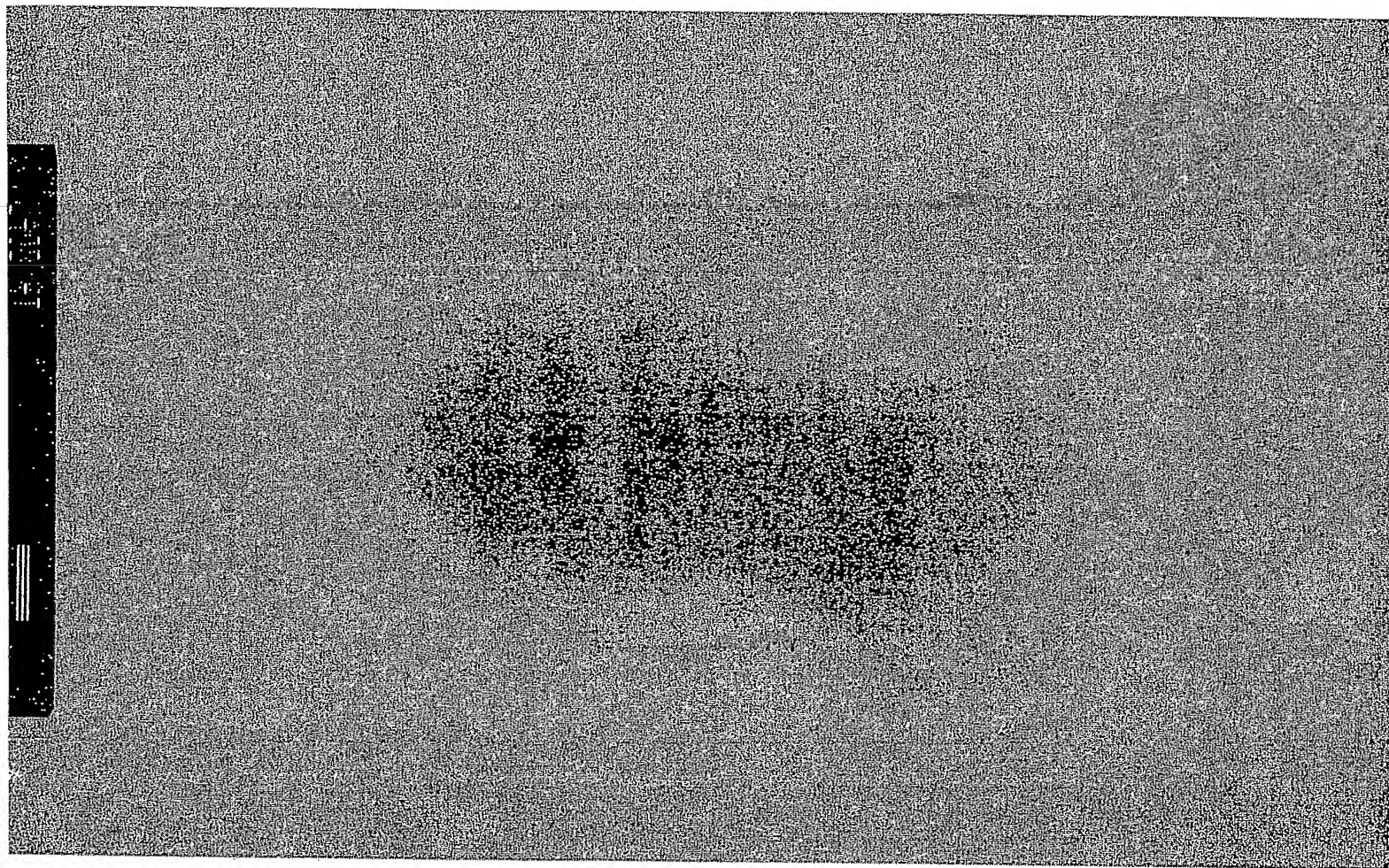
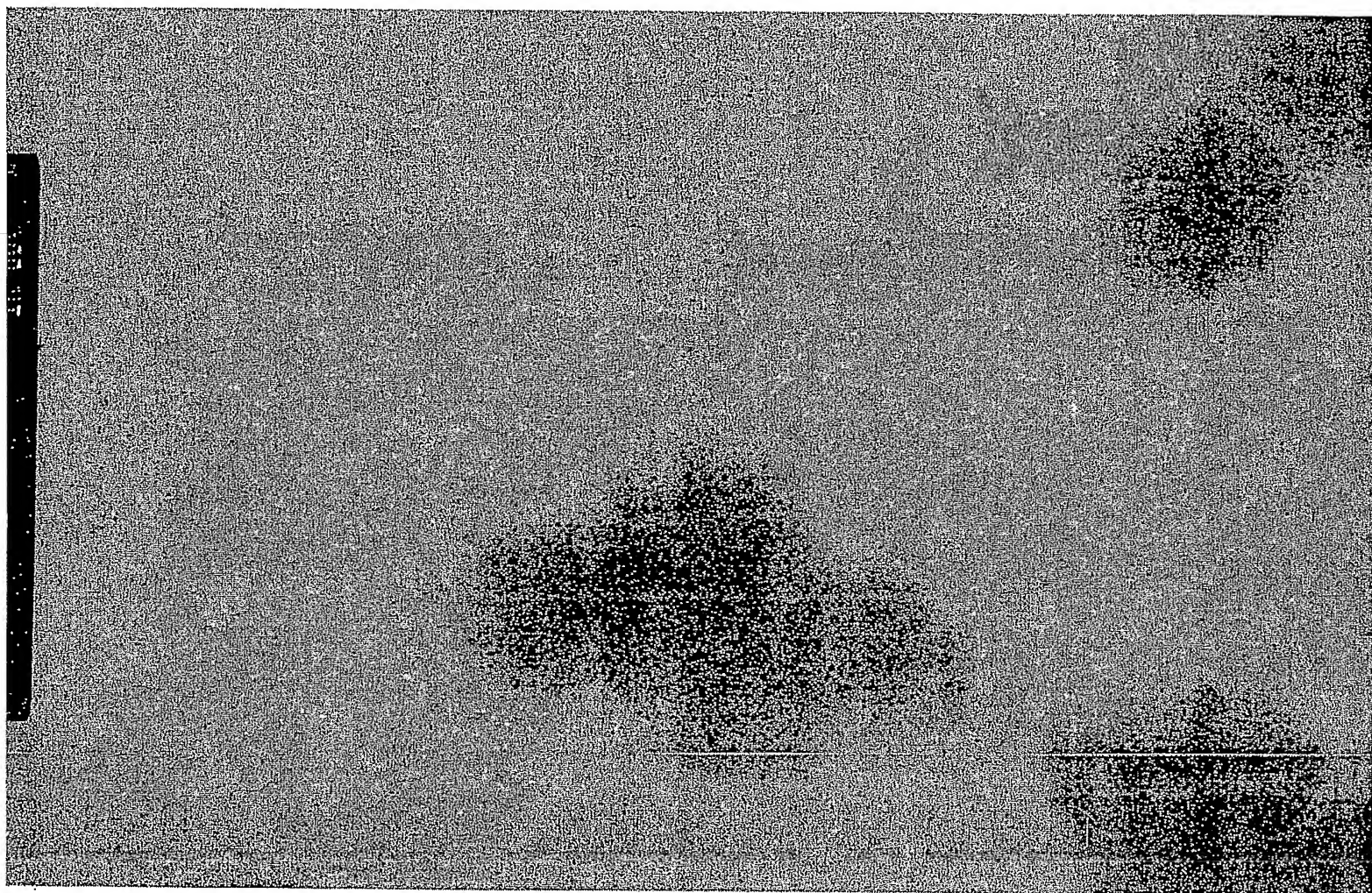


Figure 130



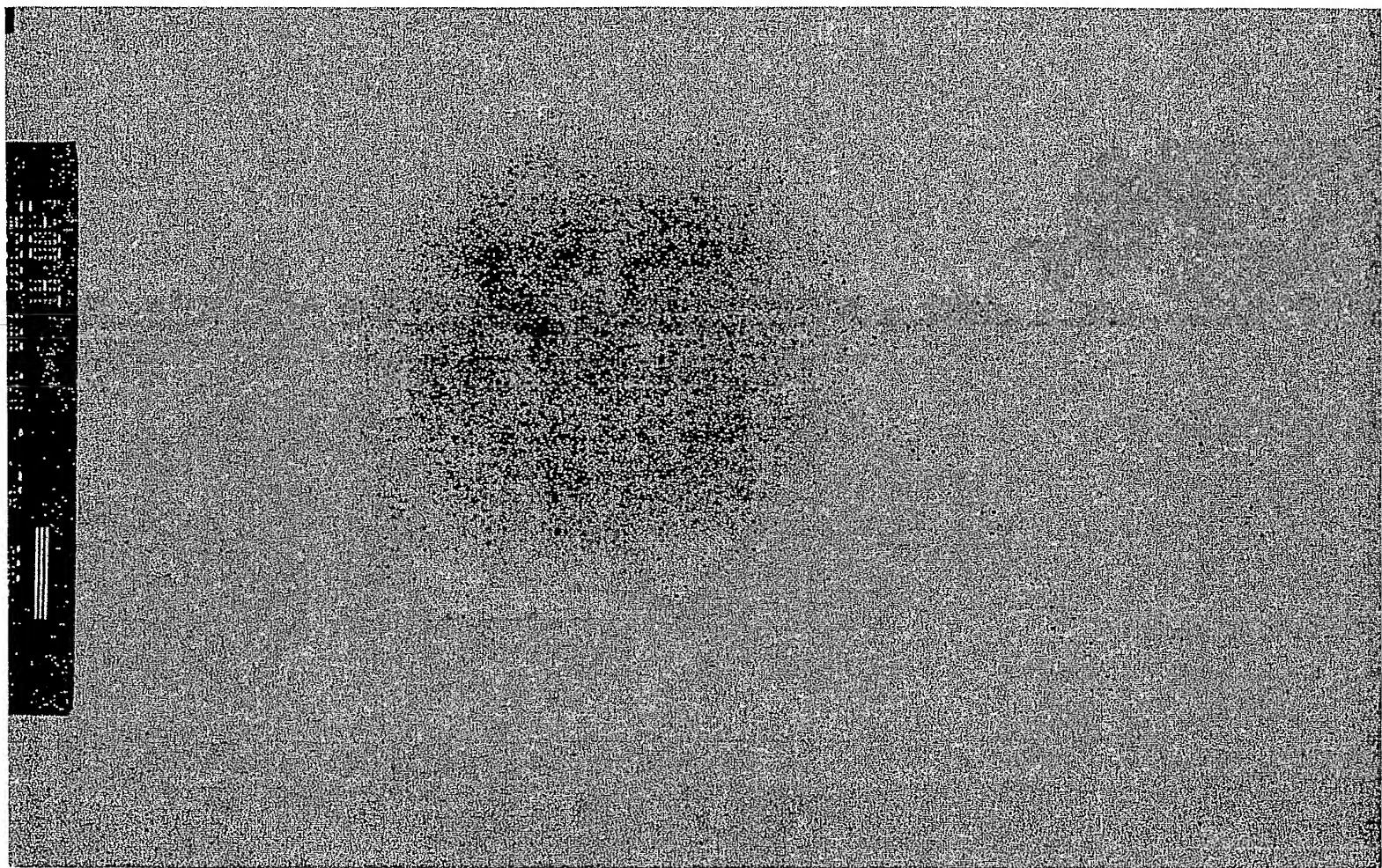
PCT/US05/27239 322/487

Figure 131



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Figure 132



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Figure 133

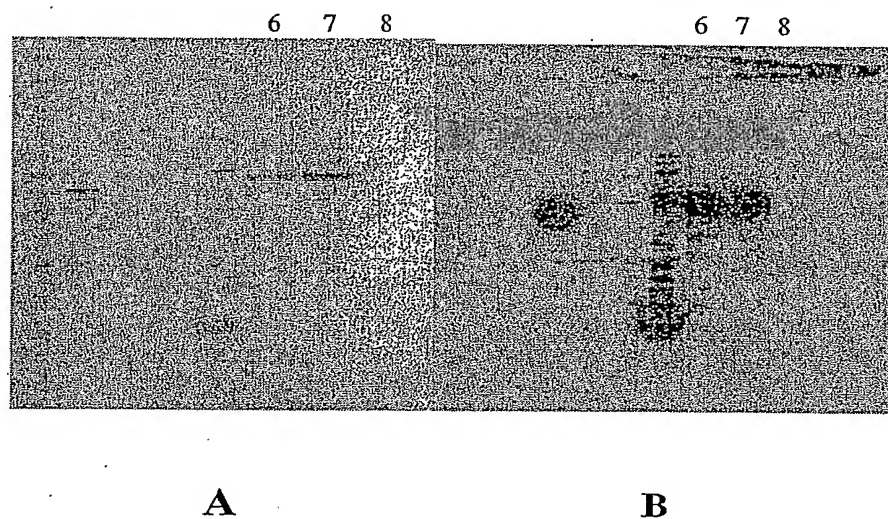
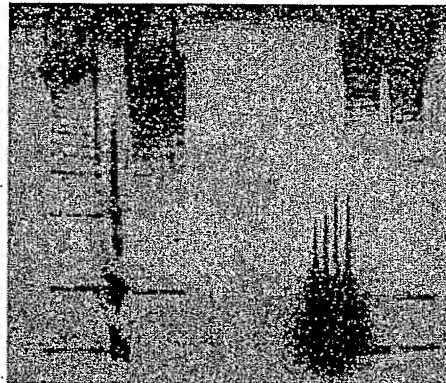


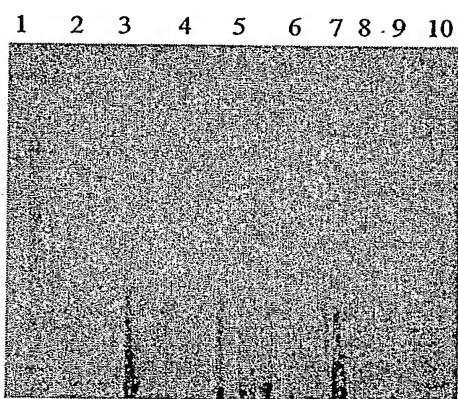
Figure 134

1 2 3 4 5 6 7 8 9 10



PCT/US05/27239 326/487

Figure 135



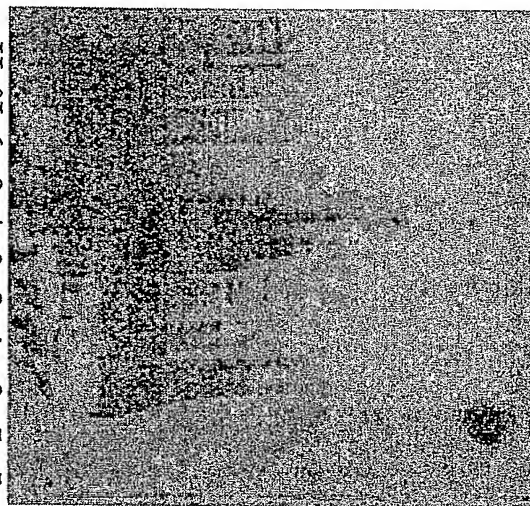
Pilus released by *Lactococcus* sonication

Figure 136A

1. MK
2. GBS 80 (10 ng)
3. L.lactis-A11 starting material (30', 0.2 OD)
4. L.lactis-A11 (not boiled, 0.33 OD)
5. L.lactis-A11 (5', 0.33 OD)
6. L.lactis-A11 (60' d, 0.33 OD)
7. L.lactis-A11 (30', 0.33 OD)
8. Supernatant (not boiled, 2 OD)
9. Supernatant (5', 2 OD)
10. Supernatant (30', 2 OD)
11. Supernatant (60', 2 OD)

SONICATED

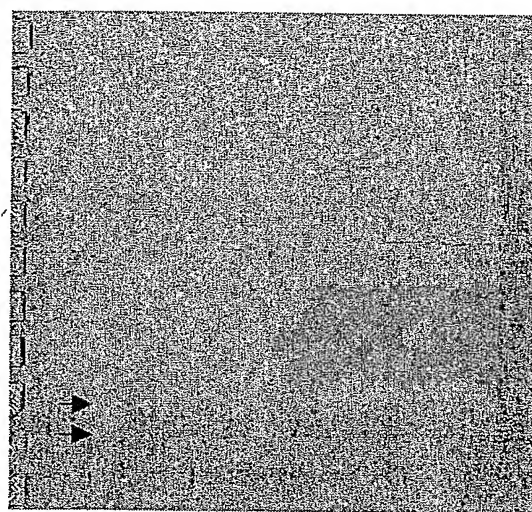
starting material	pellet	supernatant
↓		
1 2 3 4 5 6 7 8 9 10 11		



α 80

Figure 136B

1. MK
2. L.lactis-A11
3. L.lactis-A11 starting material (30', 0.33 OD)
4. L.lactis-A11 (30', 0.2 OD)
5. L.lactis-A11 (not boiled, 0.33 OD)
6. L.lactis-A11 (5', 0.33 OD)
7. L.lactis-A11 (60' d, 0.33 OD)
8. L.lactis-A11 (30', 0.33 OD)
9. Supernatant (not boiled, 2 OD)
10. Supernatant (5', 2 OD)
11. Supernatant (30', 2 OD)
12. Supernatant (60', 2 OD)



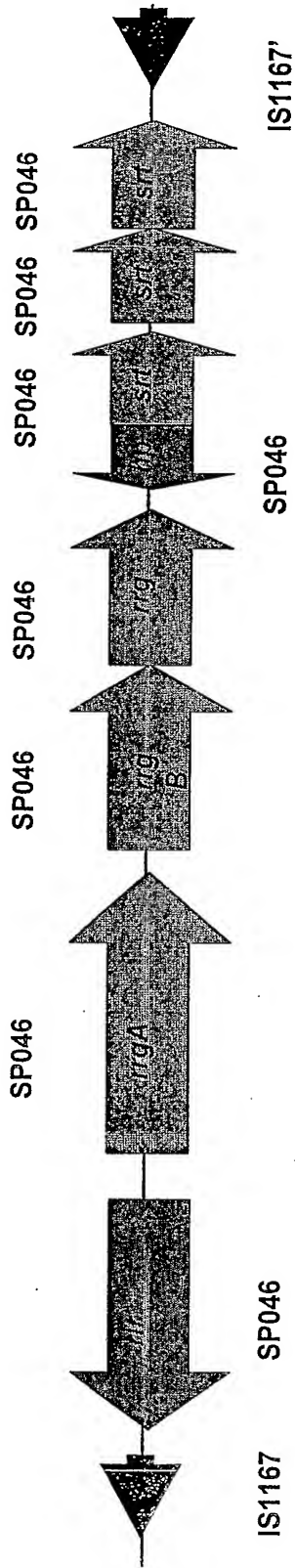


Figure 137

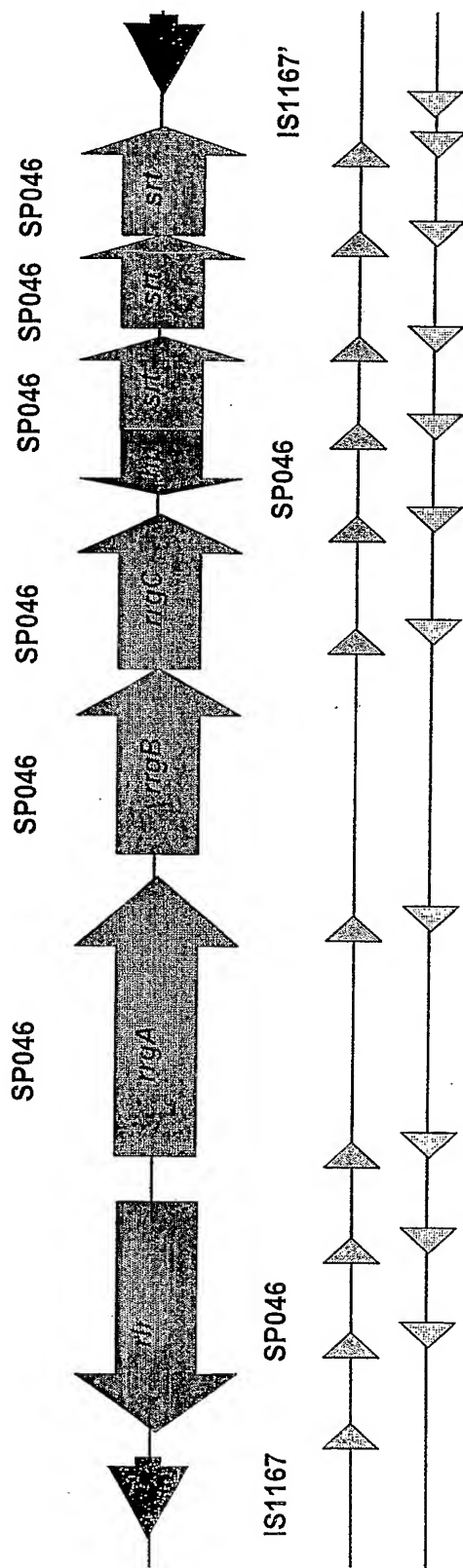
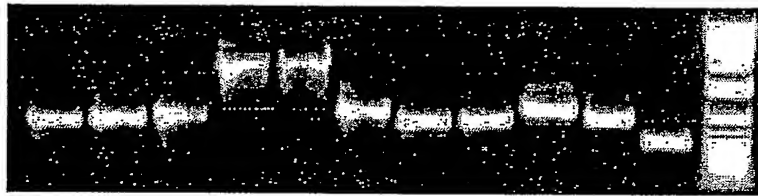


Figure 138

PCT/US05/27239 330/487

A



TIGR4

B

PCR product	contig_length _TIGR4	overlap
1	754	83
2	759	84
3	847	98
4	2550	99
5	2736	99
6	925	99
7	745	87
8	765	94
9	1008	94
10	802	64
11	461	

Figure 139

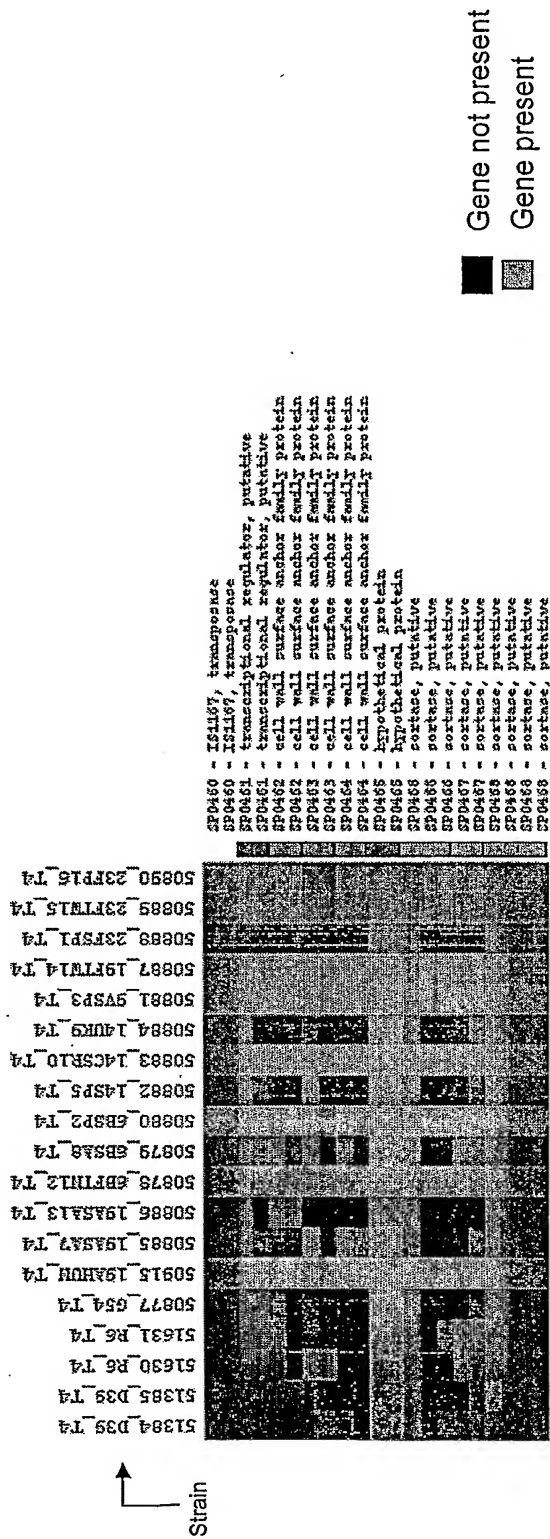


Figure 140

Figure 141A

ORF2_14CSR	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_19AH	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_19FTW	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_23FP	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_23FTW	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_670	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_6BF	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_6BSP	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_TIGR	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN
ORF2_9VSP	MLNKYIEKRITDKITILNILLDIRSIELDELSTLTSLQSKSLLSILQELQETFEELTFN

ORF2_14CSR	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_19AH	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_19FTW	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_23FP	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_23FTW	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_670	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_6BF	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_6BSP	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_TIGR	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR
ORF2_9VSP	LDTQQVQLIEHSHQTNYYFHQLYNQSTILKILRFFLLQGNQSFNEFTQKEYISIATGYR

ORF2_14CSR	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_19AH	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_19FTW	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_23FP	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_23FTW	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_670	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_6BF	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_6BSP	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_TIGR	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ
ORF2_9VSP	VRQKCGLLRSVGLDLVKNQVVGPEYRIRFLIALLOFHFGIEIYDLNDGSMWVTHMIVQ

ORF2_14CSR	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_19AH	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_19FTW	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_23FP	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_23FTW	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_670	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_6BF	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_6BSP	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_TIGR	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ
ORF2_9VSP	SNSQLSHELLEITPDEYVHFSILVALTWKRREFPLEFPESKEFEKLKNLFMPILMEHCQ

ORF2_14CSR	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_19AH	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_19FTW	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_23FP	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_23FTW	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_670	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_6BF	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_6BSP	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_TIGR	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF
ORF2_9VSP	TYLEPHANMTFTQEELDYIFLVYCSANSSFSKDKWNQEKKTHTIQLILQHTRGKHLSSKF

Figure 141B

ORF2_14CSR KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_19AH KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_19FTW KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_23FP KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_23FTW KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_670 KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_6BF KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_6BSP KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_TIGR KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE
ORF2_9VSP KNILGNDISNSLSFLTALTFLTRTFLFGLQNLVPYNNYEHYGIIESDKPLYHISKAIVQE

ORF2_14CSR WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_19AH WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_19FTW WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_23FP WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_23FTW WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_670 WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_6BF WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_6BSP WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_TIGR WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK
ORF2_9VSP WMTEQKIEGVIDQHRLYLFSLYLTETIFSSSLPAIPIFIILNNQADVNLIKSIILRNFTDK

ORF2_14CSR VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_19AH VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_19FTW VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_23FP VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_23FTW VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_670 VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_6BF VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_6BSP VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_TIGR VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR
ORF2_9VSP VASVTGYNILISPPPSEHLTEPLIIITTKKEYLPYVKKQYPKGKHHFLTIALDLHVSQQR

ORF2_14CSR LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_19AH LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_19FTW LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_23FP LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_23FTW LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_670 LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_6BF LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_6BSP LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_TIGR LIYQTIVDIRKEAFDKRVAMIAKKAHYLL
ORF2_9VSP LIYQTIVDIRKEAFDKRVAMIAKKAHYLL

Figure 142A

```
ORF3_19AH      MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_23FP      MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_14CSR     MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_670       MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_6BF       MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_6BSP      MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_19FTW     MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_9VSP      MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_23FTW     MKKVRKIFQKAVAGLCCISQLTAFSSIVALAETPETSIPAIGKVVIKETGEGGALLGDVAF
ORF3_TIGR      *****

ORF3_19AH      ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_23FP      ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_14CSR     ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_670       ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_6BF       ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_6BSP      ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_19FTW     ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_9VSP      ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_23FTW     ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
ORF3_TIGR      ELKNNTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQPPVGYPSTKQWTFVEVEKNGRT
*****;*****

ORF3_19AH      TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPYERVIPEG
ORF3_23FP      TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_14CSR     TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_670       TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_6BF       TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_6BSP      TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_19FTW     TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_9VSP      TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_23FTW     TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
ORF3_TIGR      TVQGEQVENREEALSDQYPQGTGYPDVQTPYQIIKVDGSEKNGQHKA LNPNPNPYERVIPEG
*****

ORF3_19AH      TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_23FP      TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_14CSR     TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_670       TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_6BF       TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_6BSP      TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_19FTW     TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_9VSP      TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_23FTW     TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
ORF3_TIGR      TLSKR IYQVN NLDN DQYGIELTVSGKTTVETKEASTPLDVVILLDNSNSMSNI RNHNHAHR
*****.**:.*:*****.:*:~

ORF3_19AH      AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_23FP      AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_14CSR     AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_670       AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_6BF       AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_6BSP      AEKAGEATRALVDKITSNPDNRVALVTYGSTIFDGSEATVEKG VADANGKI LND SALTWF
ORF3_19FTW     AERAGEATRSLIDKITSDPENRVALVTYASTIFDGTEFTVEKG VADKNGKRLNDSLFWNY
ORF3_9VSP      AERAGEATRSLIDKITSDPENRVALVTYASTIFDGTEFTVEKG VADKNGKRLNDSLFWNY
ORF3_23FTW     AERAGEATRSLIDKITSDPENRVALVTYASTIFDGTEFTVEKG VADKNGKRLNDSLFWNY
ORF3_TIGR      AERAGEATRSLIDKITSDPENRVALVTYASTIFDGTEFTVEKG VADKNGKRLNDSLFWNY
**:*:**::*:**::*:**::*:**::*:**::*:**::*:**::*:**::*:**::*
```

```
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DRTTFTAKTYNYSFLNLTSDPDTDIQTIKDRIPSDAEELNKDKLMYQFGATFTQKALMTAD
DQTSETNTTKDYSLKLTNDKN DIVELKNKVPTAEEDHDGNRLMYQFGATFTQKALMKAD
DQTSETNTTKDYSLKLTNDKN DIVELKNKVPTAEEDHDGNRLMYQFGATFTQKALMKAD
DQTSETNTTKDYSLKLTNDKN DIVELKNKVPTAEEDHDGNRLMYQFGATFTQKALMKAD
DQTSETNTTKDYSLKLTNDKN DIVELKNKVPTAEEDHDGNRLMYQFGATFTQKALMKAD
*: *: *: *: * : *: *: *: *. ** : : *: *: *: * : : ***** *
```

DILTKQARPNSKKVIFHITDGVPTMSYPINFKYTGTTQSYRTQLNNFKAKTPNSSGILLE
DILTKQARPNSKKVIFHITDGVPTMSYPINFKYTGTTQSYRTQLNNFKAKTPNSSGILLE
DILTKQARPNSKKVIFHITDGVPTMSYPINFKYTGTTQSYRTQLNNFKAKTPNSSGILLE
DILTKQARPNSKKVIFHITDGVPTMSYPINFKYTGTTQSYRTQLNNFKAKTPNSSGILLE
DILTKQARPNSKKVIFHITDGVPTMSYPINFKYTGTTQSYRTQLNNFKAKTPNSSGILLE
DILTKQARPNSKKVIFHITDGVPTMSYPINFENHATFAPSYQNQLNAFFFSKSPNKDGILLS
EILTQOARQNSQKVIHITDGVPTMSYPINFENHATFAPSYQNQLNVFFFSKSPNKDGILLS
EILTQOARQNSQKVIHITDGVPTMSYPINFENHATFAPSYQNQLNAFFFSKSPNKDGILLS
EILTQOARQNSQKVIHITDGVPTMSYPINFENHATFAPSYQNQLNAFFFSKSPNKDGILLS
:***:*** *:*****::: :*:*:*:*:*****

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D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F V T W S A D G E H K I V R G D G E S Y Q M F T K K P V T D Q Y G V H Q I L S I T S M E Q R A K L V S A G Y R F Y G T
D F I T Q A T S G E H T I V R G D G Q S Y Q M F T D K T V Y E K - G A P A A F P V K - P E K Y S E M K A V G Y A V I G D
D F I T Q A T S G E H T I V R G D G Q S Y Q M F T D K T V Y E K - G A P A A F P V K - P E K Y S E M K A V G Y A V I G D
D F I T Q A T S G E H T I V R G D G Q S Y Q M F T D K T V Y E K - G A P A A F P V K - P E K Y S E M K A A G Y A V I G D
D F I T Q A T S G E H T I V R G D G Q S Y Q M F T D K T V Y E K - G A P A A F P V K - P E K Y S E M K A A G Y A V I G D
** : * : : . * * . * * * * : * * * * : * * : : * : : : : * * * *

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-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
-----DLYLYWRDSILAYPFNSSTDWITNHGDPPTTWYYNGNMAQDGYDVFTVGVGVNGDP
PINGGYIWLNWRESILAYPFNSNTAKITNHGAPTRWYYNGNIAPDGYDVFTVGVGIGINGDP
PINGGYIWLNWRESILAYPFNSNTAKITNHGDPTRWYYNGNIAPDGYDVFTVGVGIGINGDP
PINGGYIWLNWRESILAYPFNSNTAKITNHGDPTRWYYNGNIAPDGYDVFTVGVGIGINGDP
PINGGYIWLNWRESILAYPFNSNTAKITNHGDPTRWYYNGNIAPDGYDVFTVGVGIGINGDP
:.* **:*.....* ***** ** *****:.* *****

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[illegible]

Figure 142C

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ORF3_19AH      IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_23FP      IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_14CSR     IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_670       IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_6BF       IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_6BSP      IDFLQADGRFDPADYTLTANDGSSLVNNVPTGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_19FTW     IDLQLGTDGRFDPADYTLTANDGSRLENGQAVGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_9VSP      IDLQLGTDGRFDPADYTLTANDGSRLENGQAVGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_23FTW     IDLQLGTDGRFDPADYTLTANDGSRLENGQAVGGPQNDGGLLKNKAVFYDTEKIRIVTG
ORF3_TIGR      IDLQLGTDGRFDPADYTLTANDGSRLENGQAVGGPQNDGGLLKNKAVFYDTEKIRIVTG
                ****.****.*****.*****.*****.*****.*****.*****.*****

ORF3_19AH      LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_23FP      LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_14CSR     LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_670       LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_6BF       LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_6BSP      LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_19FTW     LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_9VSP      LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_23FTW     LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
ORF3_TIGR      LYLGTGEKVTLTYNVRLNDQFVSNKFYDTNGRTTLHPKEVEKNTVRDFPIPKIRDVRKYP
                *****.*****.*****.*****.*****.*****.*****.*****

ORF3_19AH      EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_23FP      EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_14CSR     EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_670       EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_6BF       EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_6BSP      EITIPKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_19FTW     AITIAKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_9VSP      AITIAKEKKLGEIEFIKINKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_23FTW     EITISKEKKLGDIEFIKVNKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
ORF3_TIGR      EITISKEKKLGDIEFIKVNKNDKKPLRDAVFSLQKQHPDYDPIYGAIDQNGTYQNVRTGE
                *****.*****.*****.*****.*****.*****.*****.*****

ORF3_19AH      DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_23FP      DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_14CSR     DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_670       DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_6BF       DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_6BSP      DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_19FTW     DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_9VSP      DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_23FTW     DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
ORF3_TIGR      DGKLTFFKNLSDGKRIEENSEPAKPVQNKPIVAFQIVNGEVRDVTISVPQDIPAGYEF
                *****.*****.*****.*****.*****.*****.*****.*****

ORF3_19AH      TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKNP
ORF3_23FP      TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKNP
ORF3_14CSR     TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_670       TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_6BF       TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_6BSP      TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_19FTW     TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_9VSP      TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_23FTW     TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
ORF3_TIGR      TNDKHYITNEPIPPKREYPTGGIGMLPFYLGICMMMGGVLLYTRKHP
                *****.*****.*****.*****.*****.*****.*****.*****
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Figure 143A

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ORF4_6BF      MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_6BSP     MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_670      MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_14CSR    MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_19AH     MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_23FP     MKSINKFLTMLAALLLTASSLSFSAATVFAADNVSTAPDAVTKTLTIHKLLLSSEDDLKTWD
ORF4_23FTW    MKSINKFLTILAALLLTVSSLFSAATVFAAEQK-----TKTLTVHKLLMTDQELDAWN
ORF4_19FTW    MKSINKFLTMLAALLLTASSLSFSAATVFAAGTT-----TTSVTVHKLLATDGDMDKIA
ORF4_9VSP     MKSINKFLTMLAALLLTASSLSFSAATVFAAGTT-----TTSVTVHKLLATDGDMDKIA
ORF4_TIGR     MKSINKFLTMLAALLLTASSLSFSAATVFAAGTT-----TTSVTVHKLLATDGDMDKIA
               *****:*****.*****
               *:***:***:::.

ORF4_6BF      TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_6BSP     TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_670      TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_14CSR    TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_19AH     TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_23FP     TNGPK--GYDGTQ-----SSLKDLTGVA--EEIPNVYFELQKYNLTDGKEKENLKDD-S
ORF4_23FTW    SDAITTAGYDGSQN---FEQFKQLQGVPGQVTEISGVAFELQSYTGPQGKEQENLTND-A
ORF4_19FTW    NELETG-NYAGNKVGVLPANAKEIAGVMFVWNTNTNNEIIDENGQTLGVNIDPQTFKLSGA
ORF4_9VSP     NELETG-NYAGNKVGVLPANAKEIAGVMFVWNTNTNNEIIDENGQTLGVNIDPQTFKLSGA
ORF4_TIGR     NELETG-NYAGNKVGVLPANAKEIAGVMFVWNTNTNNEIIDENGQTLGVNIDPQTFKLSGA
               :. . . * * . : . * * : . . : : . . : : : . . :

ORF4_6BF      KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_6BSP     KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_670      KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_14CSR    KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_19AH     KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_23FP     KWTTVHGGGLTTKDGLKIETSTLKG-VYRIREDRTKTTYVGPNGQVLTGSKAVPALVTLPL
ORF4_23FTW    WVTAVNKGVTTETGVKFDTTEVLQG-TYRLVEVRKESTYVGPNGKVLTMKAVPALITLPL
ORF4_19FTW    MPATAMKKLTEAEGAKFNTANLPAKYKIYEIHSLSITYVGEDGATLTGSKAVPIEIELPL
ORF4_9VSP     MPATAMKKLTEAEGAKFNTANLPAKYKIYEIHSLSITYVGEDGATLTGSKAVPIEIELPL
ORF4_TIGR     MPATAMKKLTEAEGAKFNTANLPAKYKIYEIHSLSITYVGEDGATLTGSKAVPIEIELPL
               :. . : * * * : * * . * : * : . : * * * : * * * : * *

ORF4_6BF      VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_6BSP     VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_670      VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_14CSR    VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_19AH     VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_23FP     VNNNGTVIDAHVFPKNSYNKPVVDKRIADTLNYND-----QNGLSIGTKIPYVNTTI
ORF4_23FTW    VNQNGVVENAHVYPKNSSEDKPTATKTFDTAAGFVDP-----GEKGLAIGTKVPYIVTTTI
ORF4_19FTW    ND-----VVDAAHVYPKNTAKPKIDKDFKGGKANPDTPRVDKDPVNHQVGDVVEYIEIVTKI
ORF4_9VSP     ND-----VVDAAHVYPKNTAKPKIDKDFKGGKANPDTPRVDKDPVNHQVGDVVEYIEIVTKI
ORF4_TIGR     ND-----VVDAAHVYPKNTAKPKIDKDFKGGKANPDTPRVDKDPVNHQVGDVVEYIEIVTKI
               : * : * * : * * : * : . . : * : * : * *

ORF4_6BF      PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_6BSP     PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_670      PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_14CSR    PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_19AH     PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_23FP     PSNATFATSFWSDEMTEGLTYN-EDVTITLNNVAMDQADYEVTKGNNGFNLKLTEAGLAK
ORF4_23FTW    PKNSTLATAFWSDEMTEGLDYN-GDVVVNYNGQPLDNSHYTLEAGHGFILKLNKLEAGLEA
ORF4_19FTW    PALANYATANWSDRMTEGLAFNKGTVKVTVDVDALEAGDYALTEVATGFDLKLTDAGLAK
ORF4_9VSP     PALANYATANWSDRMTEGLAFNKGTVKVTVDVDALEAGDYALTEVATGFDLKLTDAGLAK
ORF4_TIGR     PALANYATANWSDRMTEGLAFNKGTVKVTVDVDALEAGDYALTEVATGFDLKLTDAGLAK
               * :. . * * : * * : * * : * : * : * * : * *

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Figure 143B

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ORF4_6BF      INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_6BSP     INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_670      INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_14CSR    INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_19AH     INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_23FP     INKGDADQKIQTYSATLNSLAVADIPESNDITYHYGNHQDHGNTPKPTKPN-NQOITVT
ORF4_23FTW    INKDAEATITLKYTATLNALAVADVPEANDVTFHYGNPNPHGNTPKPNKPNK-NGELTIT
ORF4_19FTW    VNDQNAEKTVKITYSATLNDKAIVEVPESNDVTFNYGNPNPDHGNTPKPNKPNENGDLTLT
ORF4_9VSP     VNDQNAEKTVKITYSATLNDKAIVEVPESNDVTFNYGNPNPDHGNTPKPNKPNENGDLTLT
ORF4_TIGR     VNDQNAEKTVKITYSATLNDKAIVEVPESNDVTFNYGNPNPDHGNTPKPNKPNENGDLTLT
:*.::*: : : :*:*** *::*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:

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ORF4_6BF      KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_6BSP     KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_670      KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_14CSR    KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_19AH     KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_23FP     KTWDSQPAP---EGVKATVQLVNAKTGEKVGAP-----VELSENNWTTYTWSGLDNSIEY
ORF4_23FTW    KTWADAKDAPI-AGVEVTFDLVNAQTGEVVKVPGHETGIVLNQTNWTFATGLDNNTEY
ORF4_19FTW    KTWVDATGAPIPAGAEATFDLVNAQTGKVVQTV-----TLTTDKNTVTVNGLDKNTTEY
ORF4_9VSP     KTWVDATGAPIPAGAEATFDLVNAQTGKVVQTV-----TLTTDKNTVTVNGLDKNTTEY
ORF4_TIGR     KTWVDATGAPIPAGAEATFDLVNAQTGKVVQTV-----TLTTDKNTVTVNGLDKNTTEY
***          *:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*

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ORF4_6BF K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_6BSP K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_670 K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_14CSR K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_19AH K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_23FP K-VEEEYNGYSAEY-TVESKGLGVKNWKDNNPAPINPEEPVKTYGKKFVKVDQKDTRL
ORF4_23FTW KFVERTIKGSADYQITITETGKIAVKNWKDENPEPINPEEPVKTYGKKFVKVDQKDERL
ORF4_19FTW KFVERSIKGSADYQEITTAGEIAVKNWKDENPKPLDPTEPKVVTYGKKFVKVNDKDNRL
ORF4_9VSP KFVERSIKGSADYQEITTAGEIAVKNWKDENPKPLDPTEPKVVTYGKKFVKVNDKDNRL
ORF4_TIGR KFVERSIKGSADYQEITTAGEIAVKNWKDENPKPLDPTEPKVVTYGKKFVKVNDKDNRL
* * * : * * : * : *

ORF4_6BF	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_6BSP	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_670	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_14CSR	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_19AH	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_23FP	ENAQFVVKKADSN-KYIAFKSTAQQAADEKAAATAKQKLDAAVAAY---TNAADKQAAQA
ORF4_23FTW	KEAQFVVKNEQG--KYLALKSAAQQAVNEKAAAEAKQALDAAIAAY---TNAADKNAAQA
ORF4_19FTW	AGAEFVIANADNAGQYLARKADKVSQEEKQLVVTTKDALDRAVAAYNALTAQQQTQQEKE
ORF4_9VSP	AGAEFVIANADNAGQYLARKADKVSQEEKQLVVTTKDALDRAVAAYNALTAQQQTQQEKE
ORF4_TIGR	AGAEFVIANADNAGQYLARKADKVSQEEKQLVVTTKDALDRAVAAYNALTAQQQTQQEKE

ORF4_6BF	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_6BSP	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_670	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_14CSR	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_19AH	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_23FP	LVDQAQQEYNVAYKEAKFGYEVAGKDE--AMVLTSNTDGGQFQISGLAAGT	KKLEIKAK
ORF4_23FTW	VVDAAQKTYNDNYRAARFGYEVERKED--ALVLTSNTDGGQFQISGLAAGS	KKLEIKAK
ORF4_19FTW	KVDKAQAAYNAAVIAANNAFEWVADKDNENVVKLVSDAQGRFEITGLLAGT	KKLEIKAK
ORF4_9VSP	KVDKAQAAYNAAVIAANNAFEWVADKDNENVVKLVSDAQGRFEITGLLAGT	KKLEIKAK
ORF4_TIGR	KVDKAQAAYNAAVIAANNAFEWVADKDNENVVKLVSDAQGRFEITGLLAGT	KKLEIKAK
	* * * * *	

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Figure 143C

ORF4_6BF	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_6BSP	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_670	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_14CSR	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_19AH	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_23FP	AKIDD-VEFVVGAGSWNQ--EFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_23FTW	AKLGD-VKFEVGAGSWNQ--DFNYLKDVQKNDATKVVNKKITIPOTGGIGTIIFAV
ORF4_19FTW	ALLTSRQKFEVTATSYSATGQGIETAGSGKDDATKVVNKKITIPOTGGIGTIIFAV
ORF4_9VSP	ALLTSRQKFEVTATSYSATGQGIETAGSGKDDATKVVNKKITIPOTGGIGTIIFAV
ORF4_TIGR	ALLTSRQKFEVTATSYSATGQGIETAGSGKDDATKVVNKKITIPOTGGIGTIIFAV

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ORF4_6BF	AGAAIMGIAVYAYVKNKDEDQLA
ORF4_6BSP	AGAAIMGIAVYAYVKNKDEDQLA
ORF4_670	AGAAIMGIAVYAYVKNKDEDQLA
ORF4_14CSR	AGAAIMGIAVYAYVKNKDEDQLA
ORF4_19AH	AGAAIMGIAVYAYVKNKDEDQLA
ORF4_23FP	AGAVIMGIAVYAYVKNKDEDQLA
ORF4_23FTW	AGAVIMGIAVYAYVKNKDEDQLA
ORF4_19FTW	AGAVIMGIAVYAYVKNKDEDQLA
ORF4_9VSP	AGAVIMGIAVYAYVKNKDEDQLA
ORF4_TIGR	AGAAIMGIAVYAYVKNKDEDQLA

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Figure 144A

ORF5_6BSP -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_TIGR -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_6BF -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_670 -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_19AH -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_14CSR -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_19FTW -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_23FTW -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_9VSP MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV
ORF5_23FP -----MTMQMKQKMISRIFFVMALCFSLVWGAHAVQAQEDHTLVQLQENYQEV

ORF5_6BSP VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_TIGR VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_6BF VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_670 VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_19AH VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_14CSR VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_19FTW VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_23FTW VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_9VSP VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV
ORF5_23FP VSQLP SRDGHRLQVWKLDDSYSDRRVQIVRDLHSDENKLSSEFKKTSFEMTFLENQIEV

ORF5_6BSP SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_TIGR SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_6BF SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_670 SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_19AH SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_14CSR SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_19FTW SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_23FTW SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_9VSP SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH
ORF5_23FP SHIPNGLYYVRSIIQTDAVSYPAEFLFEMTDQTVPLVIVAKKTDMTTKVKLIKVDQDH

ORF5_6BSP NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_TIGR NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_6BF NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_670 NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_19AH NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_14CSR NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_19FTW NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_23FTW NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_9VSP NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF
ORF5_23FP NRLEGVGFKLVSVARDGSEKEVPLIGEYRYSSEGGQVGRITLYTDKNGEIVFTNLPLGNRYF

ORF5_6BSP KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_TIGR KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_6BF KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_670 KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_19AH KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_14CSR KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_19FTW KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_23FTW KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_9VSP KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV
ORF5_23FP KEVEPLAGYAVTTLDTDVQLVDHQLVTITVVNQKLPRGNVDFMKVDGRTNTSLQGAMFKV

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Figure 144B

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ORF5_6BSP      MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_TIGR      MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_6BF       MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_670       MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_19AH      MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_14CSR     MKEESGHYTPVLQNGKEVVVTSGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_19FTW     MKEENGHYTPVLQNGKEVVASGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_23FTW     MKEENGHYTPVLQNGKEVVASGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_9VSP      MKEENGHYTPVLQNGKEVVASGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
ORF5_23FP      MKEENGHYTPVLQNGKEVVASGKDGRFRVEGLEEYGT  LWELOAPTCGVQLTSPVSFTI
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ORF5_6BSP      GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_TIGR      GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_6BF       GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_670       GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_19AH      GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_14CSR     GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKPNN
ORF5_19FTW     GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKTN
ORF5_23FTW     GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKTN
ORF5_9VSP      GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKTN
ORF5_23FP      GKDTRKELVTVVKNNKRPRIDVPTGEETLYILMLVAILLFGSGYYLTKKTN
*****.*****
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Figure 145A

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ORF6_23FTW      MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_TIGR       MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_6BSP       MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_6BF        MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_670        MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_19AH       MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_14CSR      MLIKMKVTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_23FP       MLIKMAKTKKQKRNNLLLGTVFFIGIAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_9VSP       MLIKMAKTKKQKRNNLLLGTVFFIGIAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
ORF6_19FTW      MLIKMAKTKKQKRNNLLLGTVFFIGMAVMAYPLVSRLYYRVESNQQIADFDKEKATLDEA
*****

ORF6_23FTW      DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_TIGR       DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_6BSP       DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_6BF        DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_670        DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_19AH       DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_14CSR      DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_23FP       DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_9VSP       DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
ORF6_19FTW      DIDERMKLAQAFNDSLNNVSGDPWSEEMKKKGRAEYARMLEIHERMGHVEIPVIDVDLP
*****

ORF6_23FTW      VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_TIGR       VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_6BSP       VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_6BF        VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_670        VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_19AH       VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_14CSR      VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_23FP       VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_9VSP       VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
ORF6_19FTW      VYAGTAEVLQQGAGHLEGTSLPIGGNSTHAVITAHTGLPTAKMFTDLTKLVGDKFYVH
*****

ORF6_23FTW      NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_TIGR       NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_6BSP       NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_6BF        NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_670        NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_19AH       NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_14CSR      NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_23FP       NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_9VSP       NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
ORF6_19FTW      NIKEVMAYQVDQVKVIEPTNFDDLLIVPGHDYVTLTCTPYMINTHRLVLRGHRIPYVAE
*****

ORF6_23FTW      VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_TIGR       VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_6BSP       VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_6BF        VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_670        VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_19AH       VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_14CSR      VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQPEKALKALKAAARKEVKVE
ORF6_23FP       VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQSERALKALKEATKEVKVE
ORF6_9VSP       VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQSERALKALKEATKEVKVE
ORF6_19FTW      VEEEFIAANKLSHLYRYLFYVAVGLIVILLWIIRRLRKKKKQSERALKALKEATKEVKVE
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Figure 145B

ORF6_23FTW	DGQQ
ORF6_TIGR	DGQQ
ORF6_6BSP	DGQQ
ORF6_6BF	DGQQ
ORF6_670	DGQQ
ORF6_19AH	DGQQ
ORF6_14CSR	DGQQ
ORF6_23FP	DE--
ORF6_9VSP	DE--
ORF6_19FTW	DE-

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[illegible]

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Figure 147

ORF8_14CSR MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_19AH MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_23FTW MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_670 MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_6BF MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_6BSP MSKAKLQKLLGYLLMLVALVIPVYCFGQMVLSLQGVKGHEIFSESVTADSYQEQLQSRSL
ORF8_19FTW MSRTKLRALLGYLLMLVACLIPIYCFGQMVLSLQGVKGHATFVKSMTTTEMYQEQQNHSL
ORF8_23FP MSRTKLRALLGYLLMLVACLIPIYCFGQMVLSLQGVKGHATFVKSMTTTEMYQEQQNHSL
ORF8_9VSP MSRTKLRALLGYLLMLVACLIPIYCFGQMVLSLQGVKGHATFVKSMTTTEMYQEQQNHSL
ORF8_TIGR MSRTKLRALLGYLLMLVACLIPIYCFGQMVLSLQGVKGHATFVKSMTTTEMYQEQQNHSL
::*:*: ***** :*:***** * :*:*: ***** :*:*

ORF8_14CSR DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_19AH DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_23FTW DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_670 DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_6BF DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_6BSP DYNQRLDSQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLAM
ORF8_19FTW AYNQRLASQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLGM
ORF8_23FP AYNQRLASQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLGM
ORF8_9VSP AYNQRLASQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLGM
ORF8_TIGR AYNQRLASQNRIVDFFLAEGYEVNYQVSDDPDAVYGYLSIPSLTIMEPVYLGADYHHLGM
***** :*:***** :*

ORF8_14CSR GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_19AH GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_23FTW GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_670 GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_6BF GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_6BSP GLAHVDGTPLPVEGKGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_19FTW GLAHVDGTPLPLDGTGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_23FP GLAHVDGTPLPLDGTGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_9VSP GLAHVDGTPLPLDGTGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
ORF8_TIGR GLAHVDGTPLPLDGTGIRSVIAGHRAEP SHVFFRHL DQLKVG DALYYDNGQEIVEYQMM D
***** :*:***** :*

ORF8_14CSR TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_19AH TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_23FTW TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_670 TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_6BF TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_6BSP TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_19FTW TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_23FP TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_9VSP TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
ORF8_TIGR TEIILPSEWEKLESVSSKNIMTLITCDPIPTFNKRLLVNFERVAVYQKSDPQTAAVARVA
***** :*:***** :*

ORF8_14CSR FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_19AH FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_23FTW FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_670 FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_6BF FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_6BSP FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_19FTW FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_23FP FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_9VSP FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
ORF8_TIGR FTKEGQSVSRVATSQWLYRGLVLAFLGILFVLWKLARLLRGK
***** :*:***** :*

PCT/US2005/027239 346/487

RrgA, LPXTG

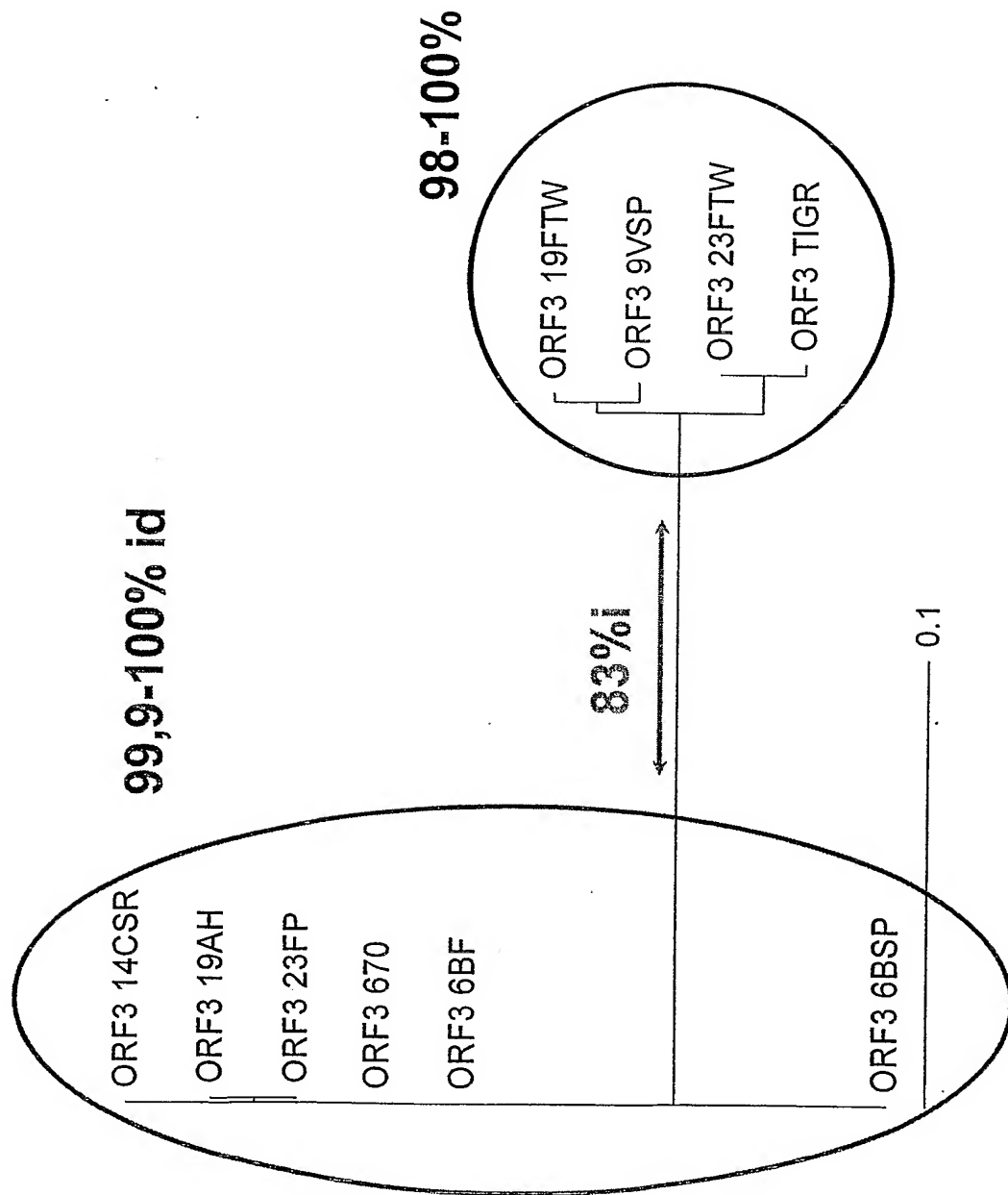


Figure 148

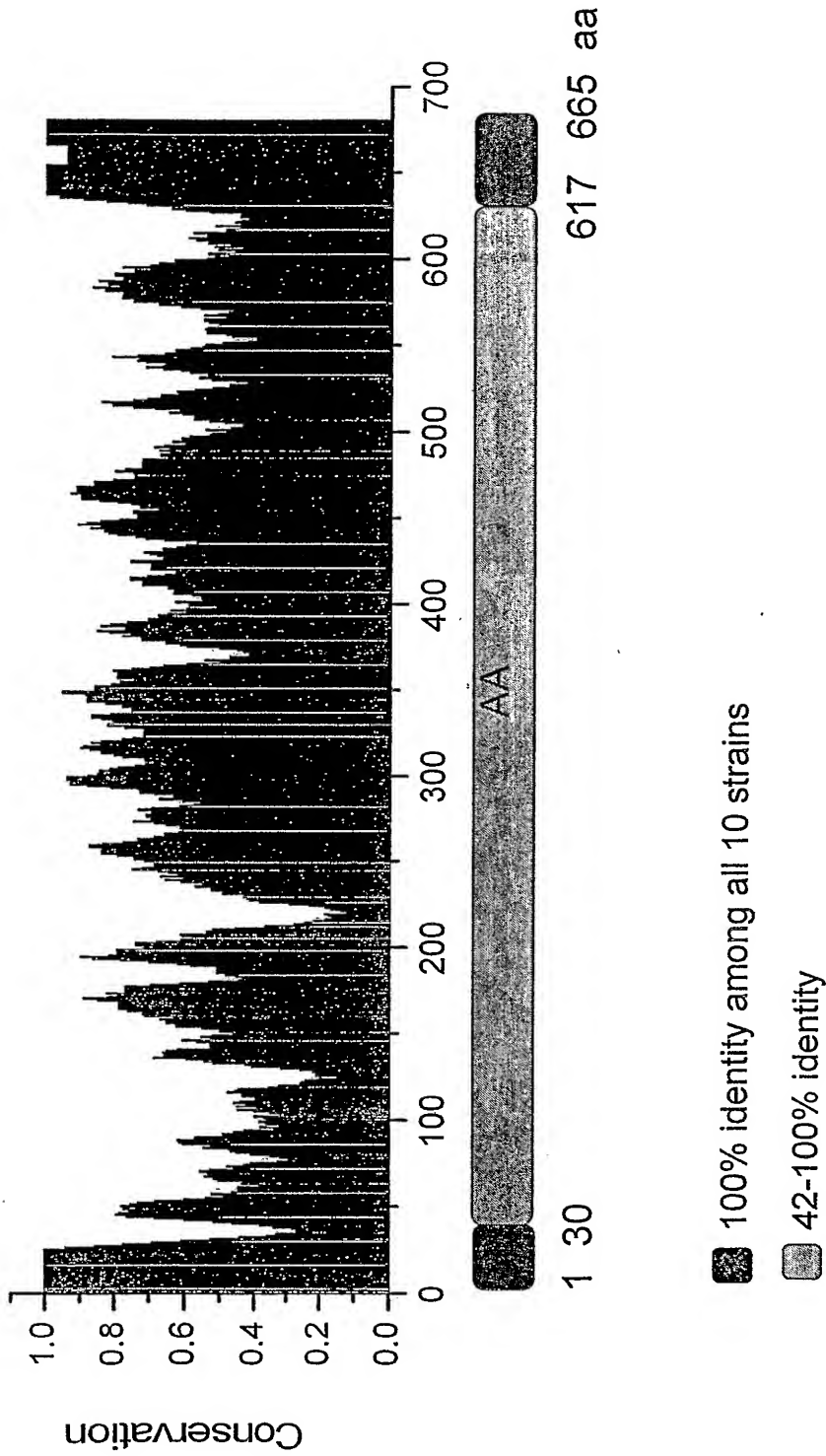


Figure 149

A

MLNRETHMKVKRKFQKAVAGLCCISQLTAFSSIVALA*ETPETSPIGKVVIKETGEGGALLGDAVFELKN
 NTDGTTVSQRTEAQTGEAIFSNIKPGTYTLTEAQQPVGYKPKSTKQWTVVEKNGRRTTVQGEQVENREE
 ALSDQYPQTGTYPDVQTPYQIIKVDGSEKNGQHKALNPNPYERVIPGTL SKRIYQVNNLDDNQYGIEL
 TVSGKTVYEQDKSVPLDVVILLDNSMSNIRNKNARRAERAGEATRSIDKITSSEN RVALV TYAS
 TIFDGTFTVEKGVADKNGKRLNDSLFWNYDQTSFTTNTKDYSLKLTNDKNDIVELKNKVPTEAEDHD
 GNRLMYQFGATFTQKALMKADEILTQQAQNSQKVIFHITDGVPTMSYPINFNHA TFAPSYQNQLNA
 FFSKSPNKDGILLSDFITQATSGEHTIVRGDQSYQMFTDKTVYEKGAPAAFPVKPEKYSEMKAAGYAVI
 GDPINGGYIWLNWRESILAYPFNSNTAKITNHGDPTRWYYNGNIAPDGYDVFTVGIGINGDPGTDEATA
 TSFMQSISSKPENYTNVTDTTKILEQLNRYFHTIVTEKKSIENTTIDPMMGELIDLQLGTDGRFDPADYTL
 TANDGSRLENGQAVGGPQNDGGLLKNAKVL YDTTEKRIRVTGL YLGTDEKVTLTYNVRLNDEFVSNKFYD
 TNGRTTLHPKEVEQNTVRDFPKIRDVRKYPEITISKEKKGDIKLVNKNNDKKPLRGAVFSLOKQHPDYP
 DIYGAIQNGTYQNVRTGEDGKLTfKNLSDGKYRLFENSEPAGYKPVQNKPIVAFQIVNGEVRDVT SIVPQ
 DIPAGYEFTNDKHYYITNEP PPKREYPR TGGIGMLPFY LIGCMMMG LLYTRKHP

B

5' cgggatcc-gaa-acg-cct-gaa-acc-agt 5' 24mer, 54 %G+C, Tm 62

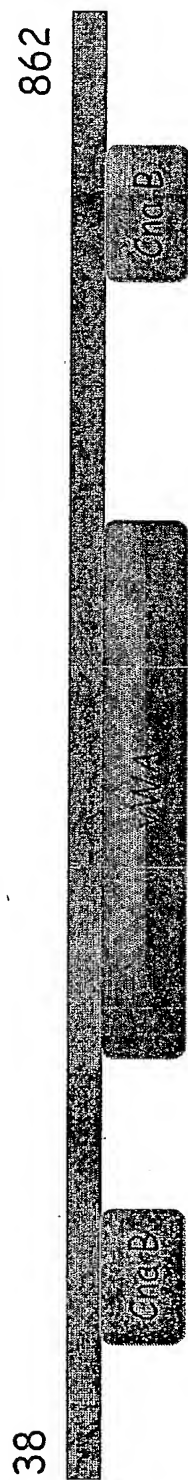
*Bam*HI

3' ccgctcgag-aat-agg-ttc-att-ggt 3' 27mer, 52 %G+C, Tm 61.6

*Xho*I

Figure 150

A.

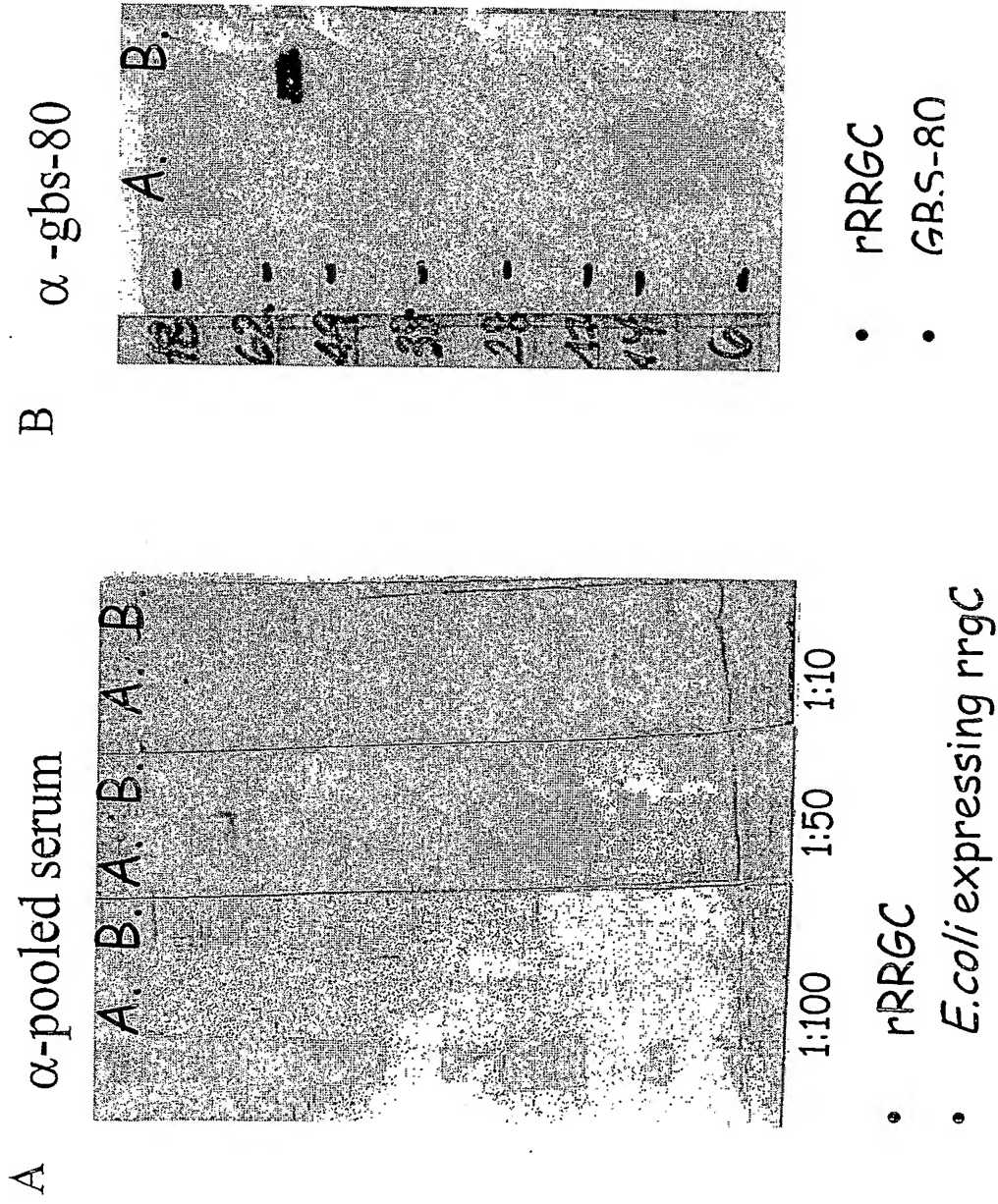


B.



Figure 151

Figure 152



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A

MKSINKFLTMLAALLLTASSLS* AATVFAAGTTTTSVTVHKLLATDGDMDKIANELETGNYAGNKVGVLP
 NAKELAGVMFVWNTNNEIIDENGQTLGVNIDPQTFKLSGAMPATAMKKL TEAEGAKFNTANLPAAKYKIY
 EHSLSYVGEDGATLTGSKAVPIEIELPLNDVVDAHVYPKNTAKPKIDKDFKGKANPDTPRVDKDTPVNHQV
 GDVVEYEVTKIPALANYATANWSDRMTEGLAFNKGTVKVTVDDVVALEAGDYALTEVATGFDLKLTDAGLAK
 VNDQNAEKTIVKITYSATLNDKAIVEVPESNDVTFNYGNNPDHGNTPKNKPNENGDLTLTKTWV DATGAPIP
 AGAEATFDLVNAQTGKVVQTVTLTTDKNTVTVNGLDKNTYKFVVERSIKGYSDYQEITTA GEIAVKNNWKD
 ENPKPLDPTEPKVVITYGKKFVKVNDKDNRLAGAEFVIANADNAGQYLARKADKVSQEEKQLVVTTKDALDRAV
 AAYNALTAQQQTQQEKEKVDKAQAAYNAAVLAANNAFEWVADKDNE NVVKLVSDAQGRFEITGLLAGTY
 YLEETKQPAGYALLTSRQKFEVTATSYSATGQGIEYTAGSGKDDATKVVNKKITIPQTGGIGTIIFAVAGAAI
 MGLAVYAYVKNKDEDEQLA

B

5' cgggatcc-gct-gca-aca-gtt-ttt 3' 23mer, 52.2% G+C, Tm 60.6

*Bam*HI

5' ccgctcgcg-agt-gat-ttt-ttt-gtt-gac 3' 26mer, 44.4% G+C, Tm 61.7

*Xho*I

Figure 153

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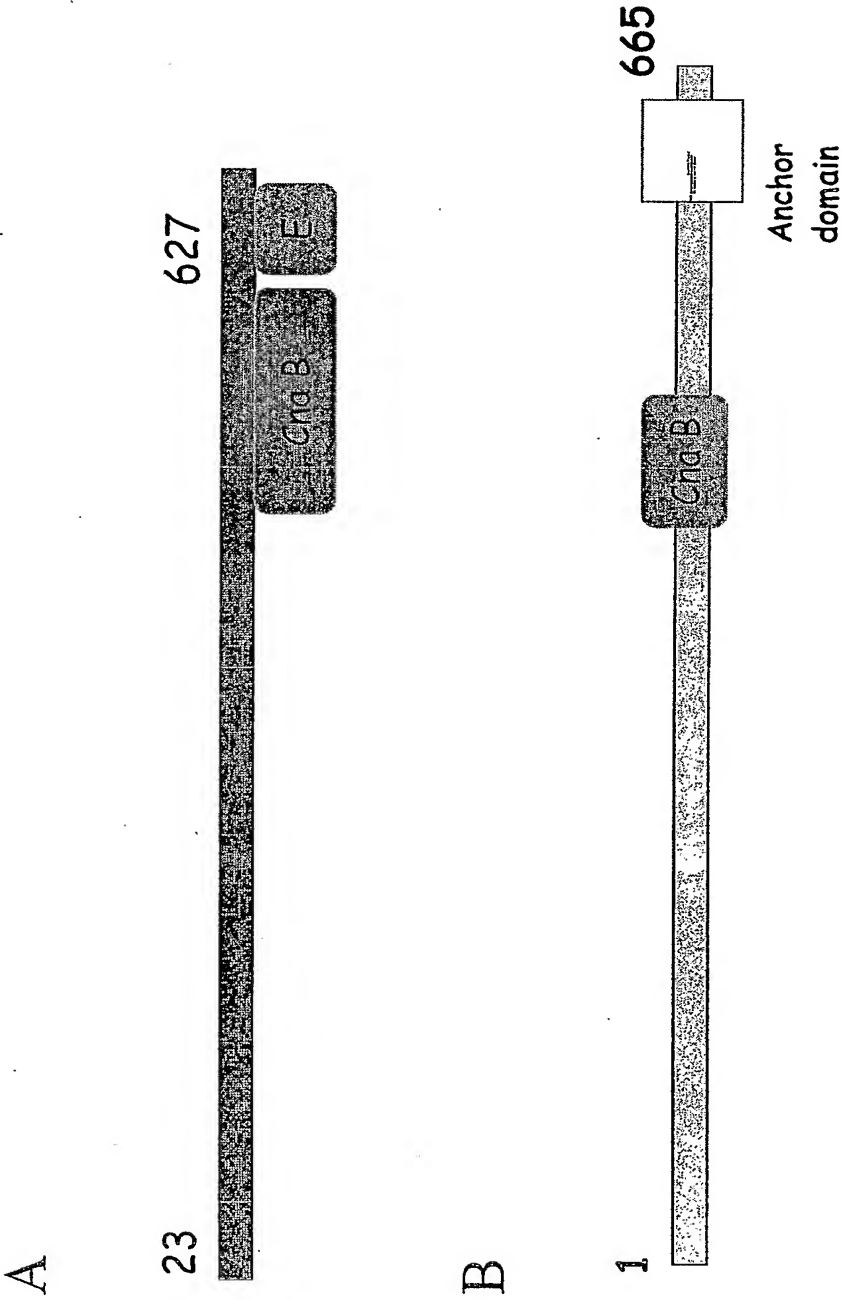
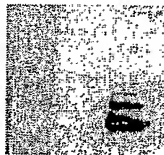


Figure 154

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60 kDa



Figure 155

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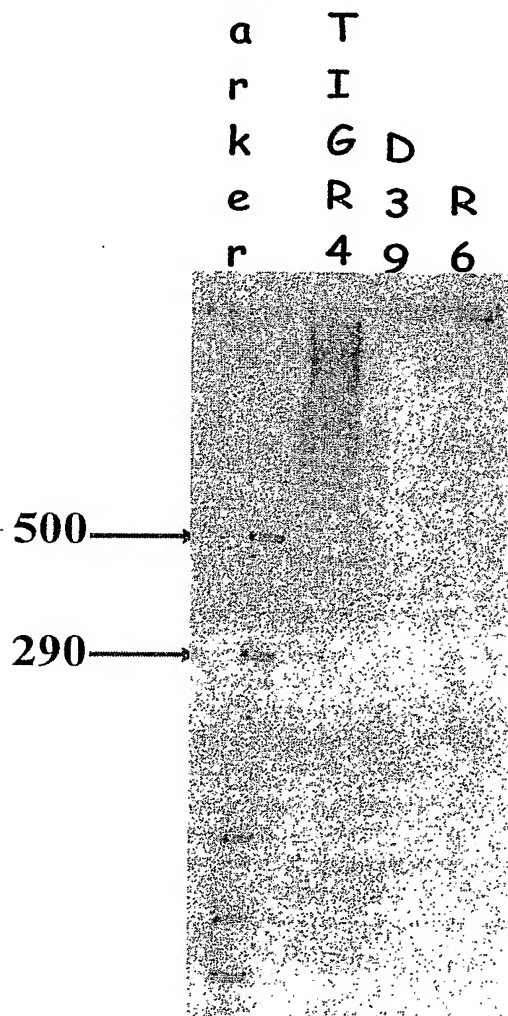


Figure 156

PCT/US05/27239

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A

MISRIFFVMA~~LCFSLVWGA~~*HAVAQEDHTLVLENYQEVVSQLPSRDGHRQLQVWKLDSDSYS
 YDDR~~VQIVRDLHSWDENKLS~~FFKKT~~TSFEMTFLENQIEVSHIPNGLYYVRSIQTD~~AVSYPAEFLF
 EMTDQ~~TVEPLVIVAKKTD~~MTTKVKLIKVDQDHNRL~~EGVGFKLVSVARDVSEKEVPLIGEYR~~YSSS
 GQVGR~~TLYTDKNGEIVTNLPLGN~~YR~~FEKEVEPLAGYAVTTLD~~TDVQLVDHQLVTTTVVNQKLPRGN
 VDFMKVDGR~~INTSLQGAMFKVMKEESGHYTPVLQNGKEVV~~TS~~GKDGRFRVEGLE~~YGTYYLWELQ
 APTGYVQLTSPVSFTIGKDT~~TRKELVTIVVKNNKRP~~RDV~~PD~~TGEETLYILMLVAILLFGSGYYLTKKP
 NN

B

5' cg~~ggatcc~~-cat-gtc-caa-gcg-caa-gaa 21mer, 61% G+C, Tm 60.8

*Bam*HI

5' ccg~~ctcgag~~-ctt-gtt-att-ttt-aac-cac 27mer, 44% G+C, Tm 58.4

*Xho*I

Figure 157

A



B



Figure 158

PCT/US05/27239 357/487

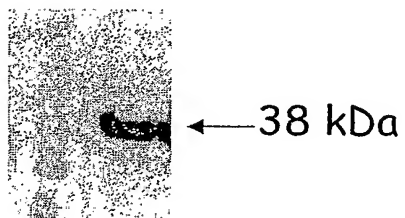


Figure 159

PCT/US2005/027239

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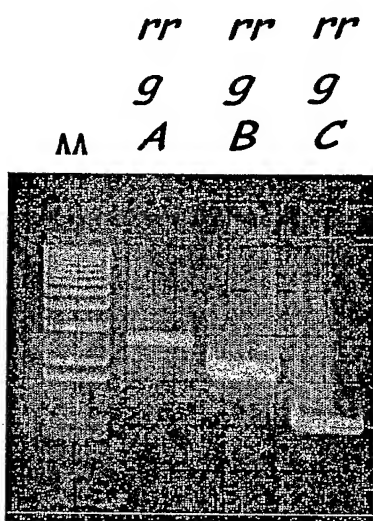
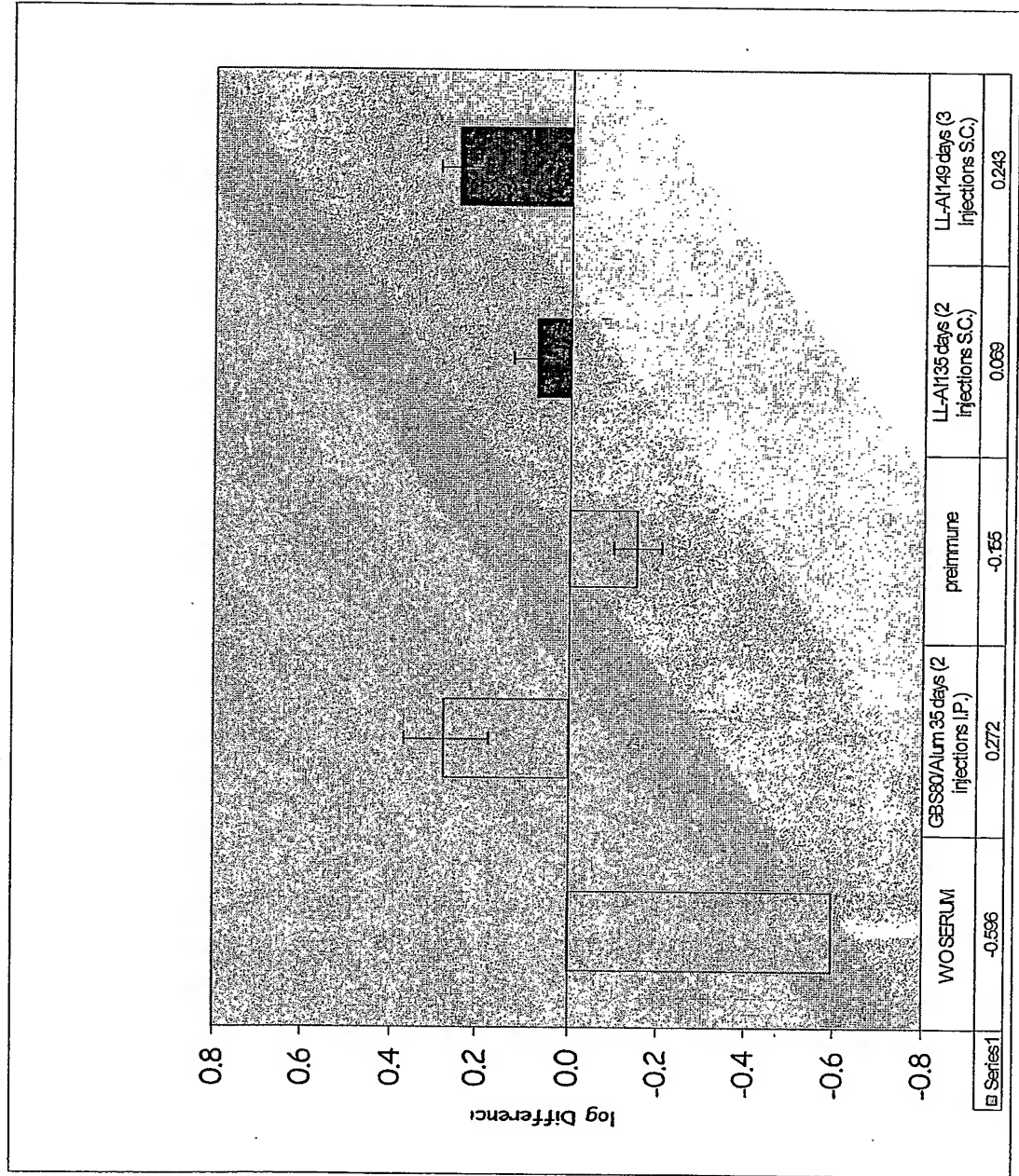


Figure 160

Figure 161



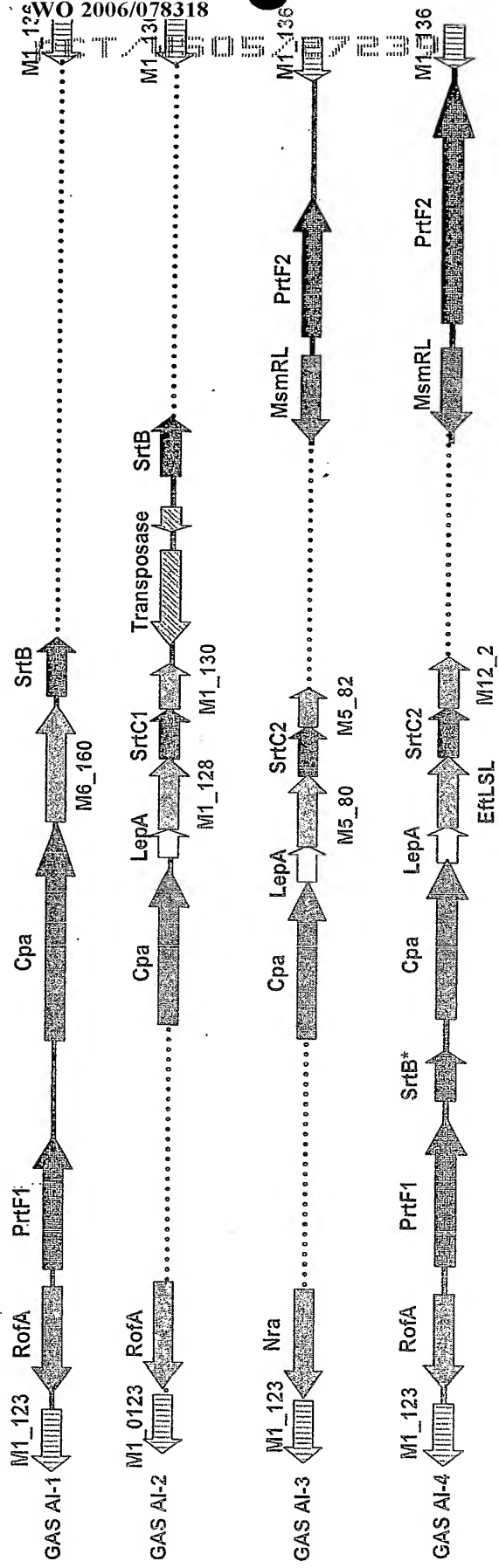
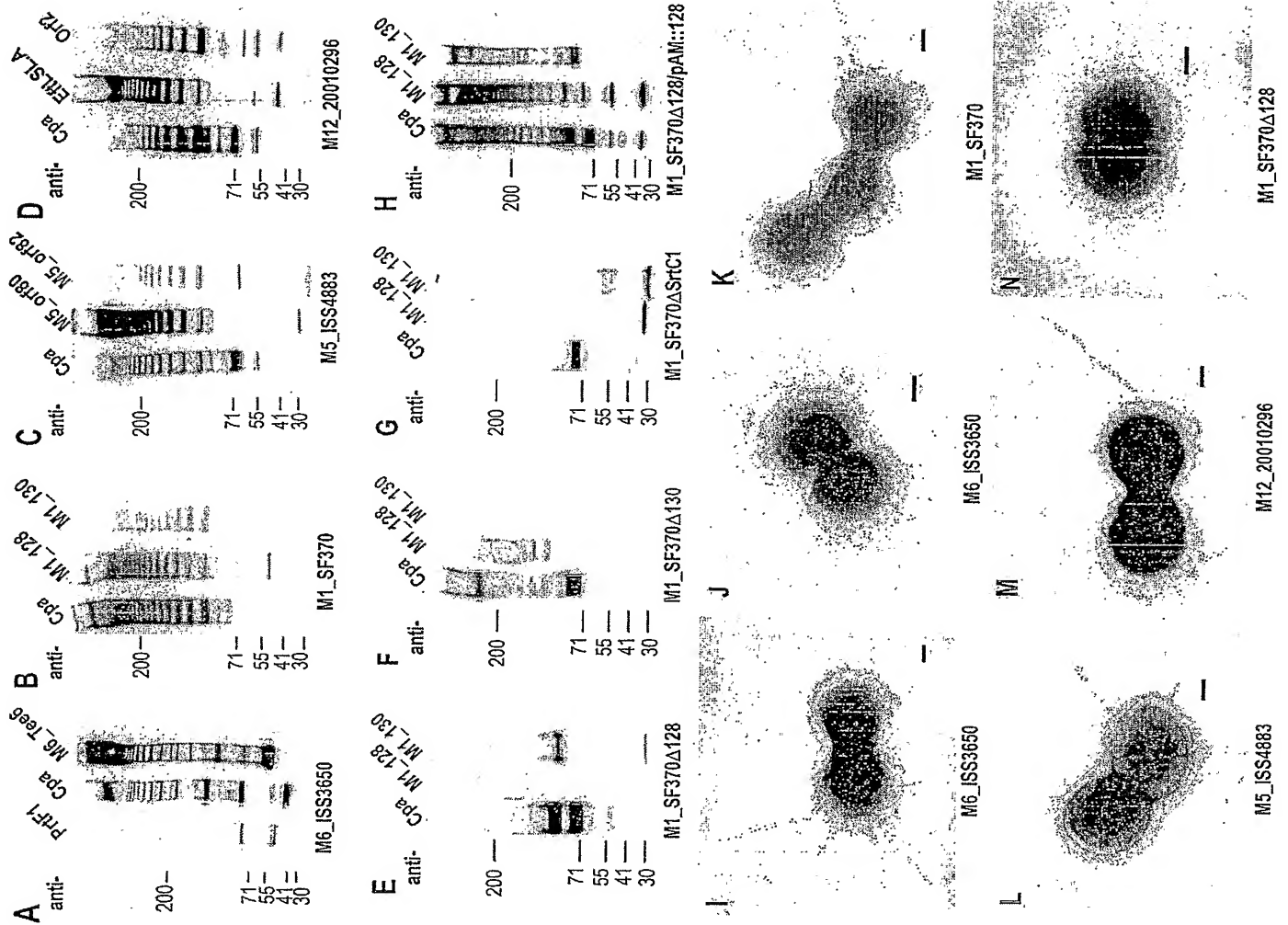


FIGURE 162

Figure 163



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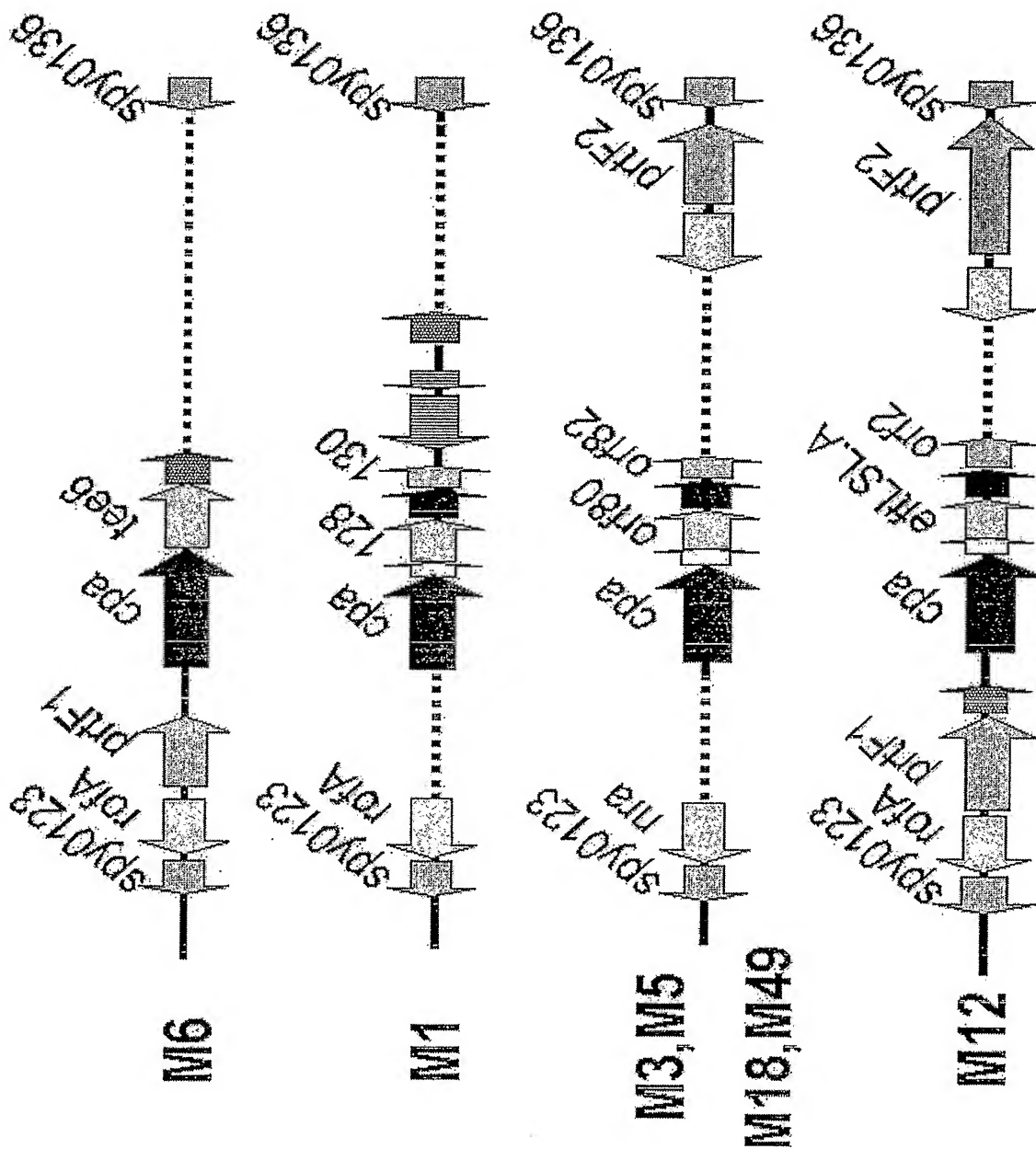


Figure 164

PCT/US05/27239363/487

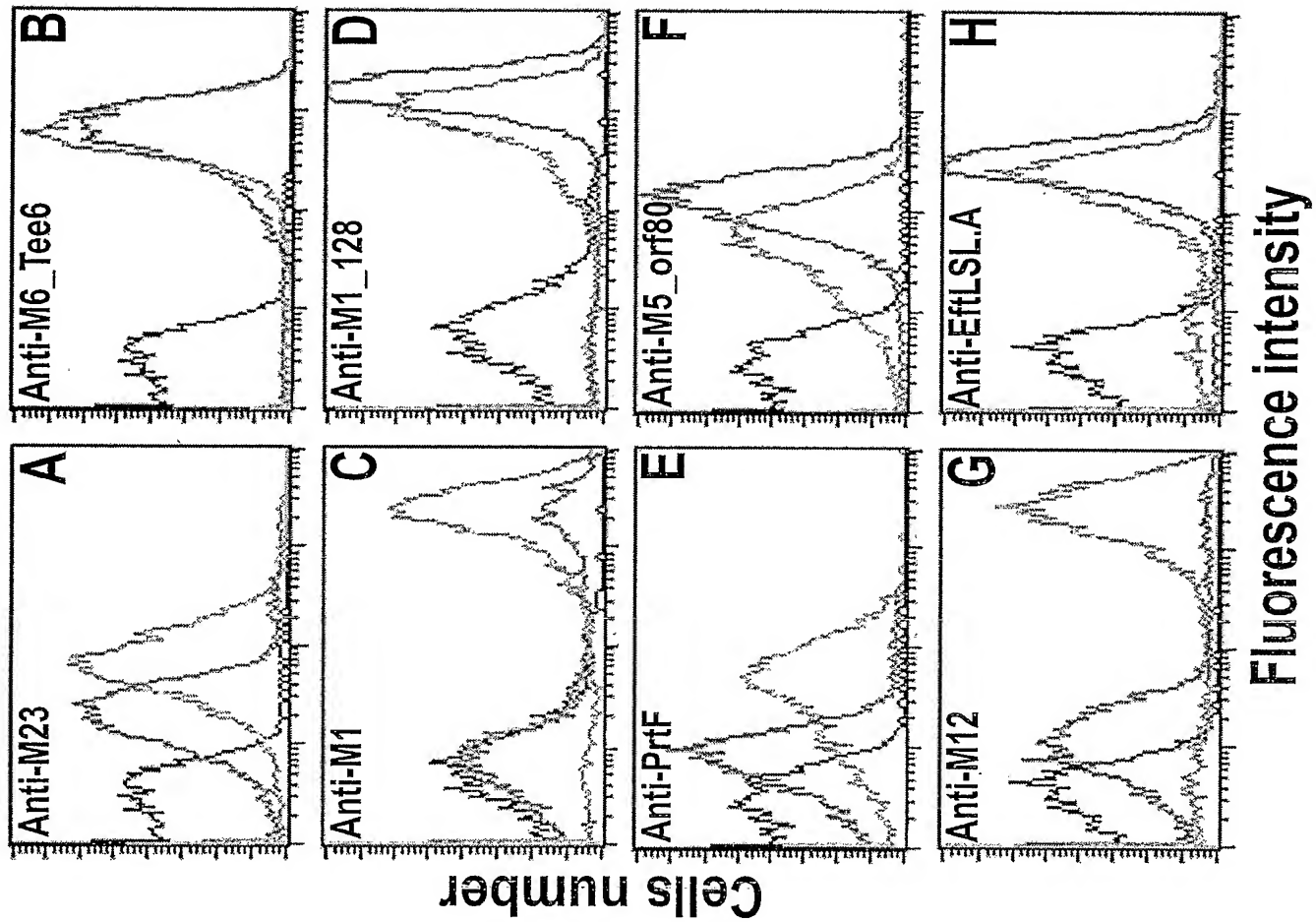


Figure 165

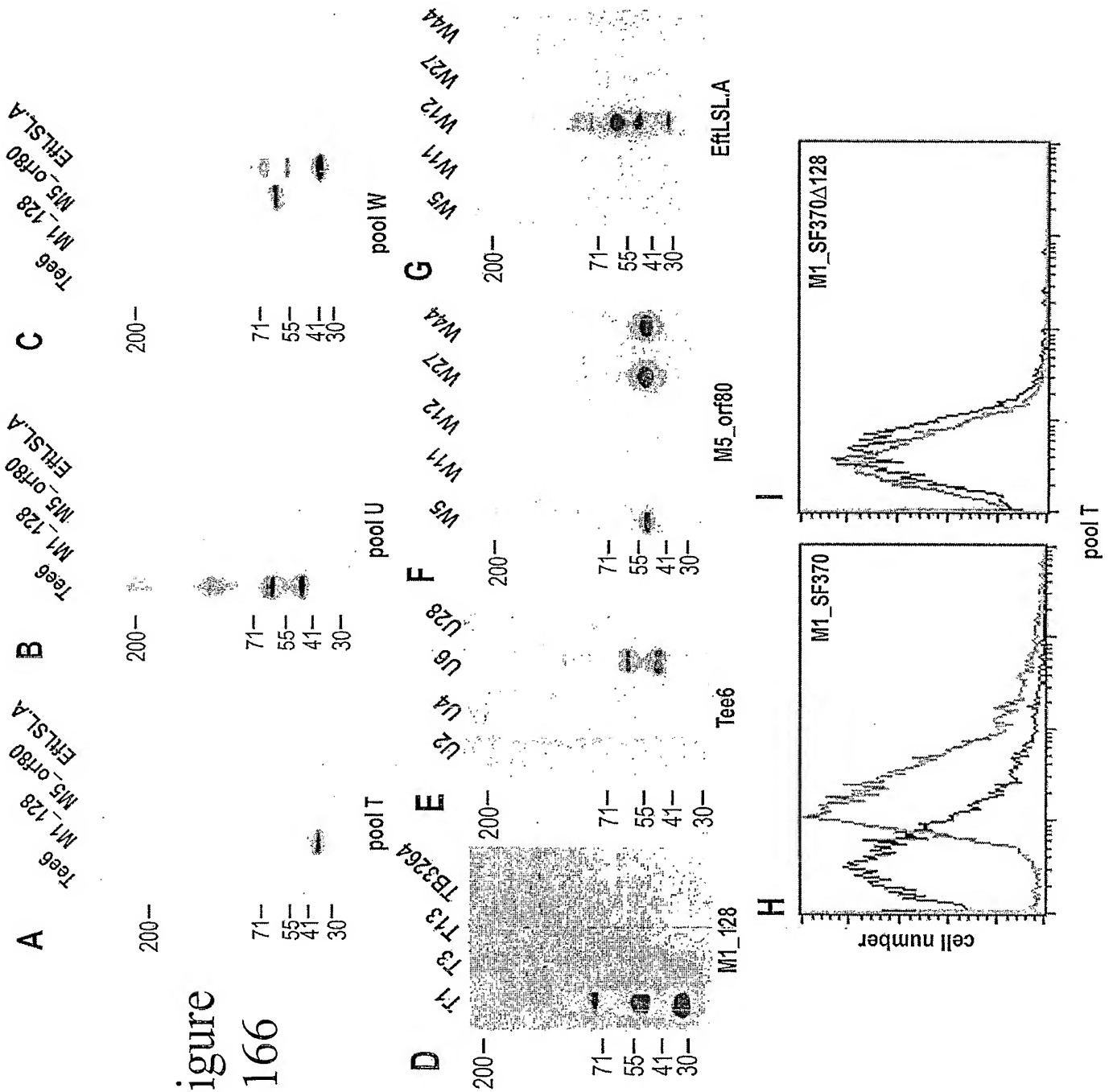


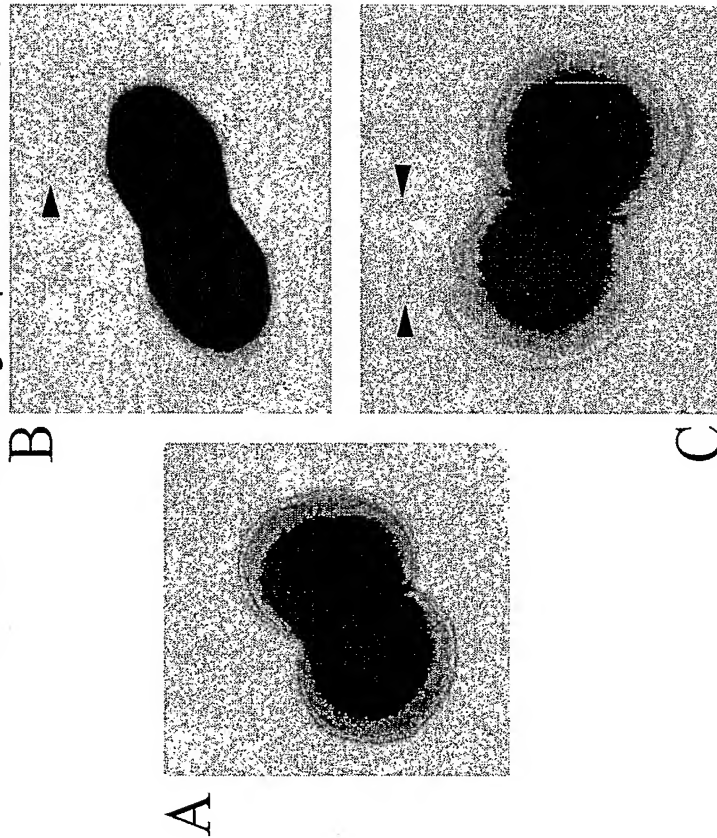
Figure 167

Strain	M-type	PCR					AI	Sequence
		SrtB	SrtC1	SrtC2	MsmRL	SipA2		
2724	6	+	-	-	-	-	1	
2894	6	+	-	-	-	-	1	
3650	6	+	-	-	-	-	1	
5529	6	+	-	-	-	-	1	
Dsm2071	23	+	-	-	-	-	1	+
SF370	1	+	+	-	-	-	2	literature
2580	1	+	+	-	-	-	2	
2913	1	+	+	-	-	-	2	
3280	1	+	+	-	-	-	2	
3348	1	+	+	-	-	-	2	
2719	?	+	+	-	-	-	2	
2721	3	-	-	+	+	+	3	
3040	3	-	-	+	+	+	3	
3135	3	-	-	+	+	+	3	
3776	44 ?	-	-	+	+	+	3	+
4959	77	-	-	+	+	+	3	+
4088	Clinical isolate	-	-	+	+	+	3	
2728	12	+	-	+	+	+	4	
2720	9	+	-	+	+	+	4	+
2727	11	+	-	+	+	+	4	+
4436	28	+	-	+	+	+	4	+
5481	44 ?	+	-	+	+	+	4	+
4538	50	+	-	+	+	+	4	+
3789	78	+	-	+	+	+	4	+
4883	5	+	-	+	+	+	4	
5476	89	+	-	+	+	+	4	
5495	?	+	-	+	+	+	4	
2722	4	-	-	-	-	-	?	
2723	5?	-	-	-	-	-	?	
2725	8	-	-	+	-	-	?	
2726	2	-	-	-	-	-	?	
2634	4	-	-	-	-	-	?	
5531	75	+	+	-	-	-	?	In progress

Figure 168

Immuno-electronmicroscopy

(Immunogold Negative Staining,
1° α - 80, 2° α - mouse gold particles 10nm)



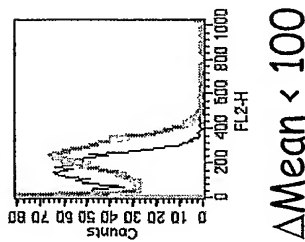
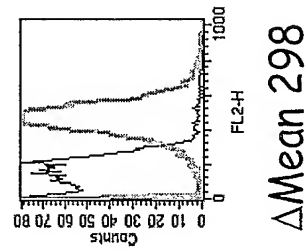
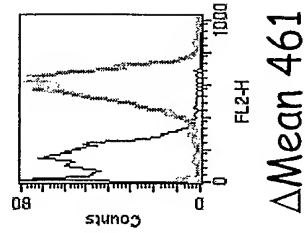
<i>L.lactis</i>	<i>L.lactis</i> + AI-1
-	+

Figure 169

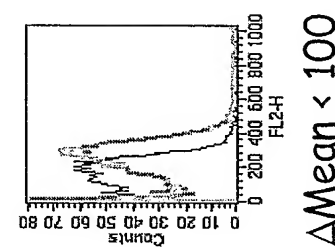
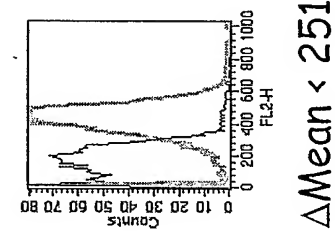
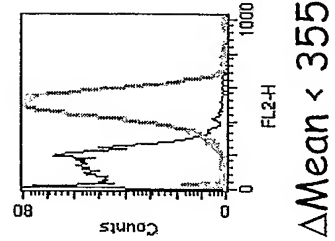
GBS JM9130013

L. lactis + AI-1

L. lactis



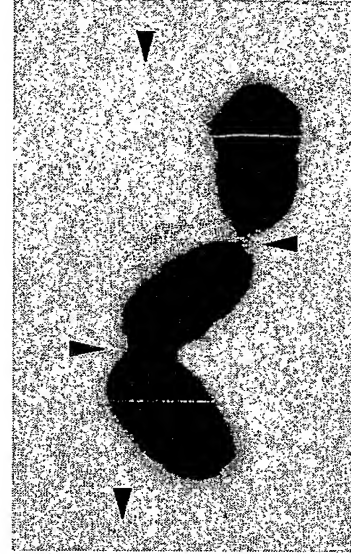
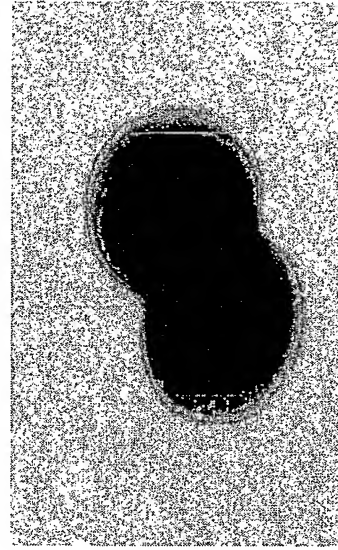
α -80



α -104

Figure 170

Phase contrast Microscopy Immuno-electronmicroscopy
(Immunogold Negative Staining,
1° α -80, 2° α -mouse gold particles 10nm)



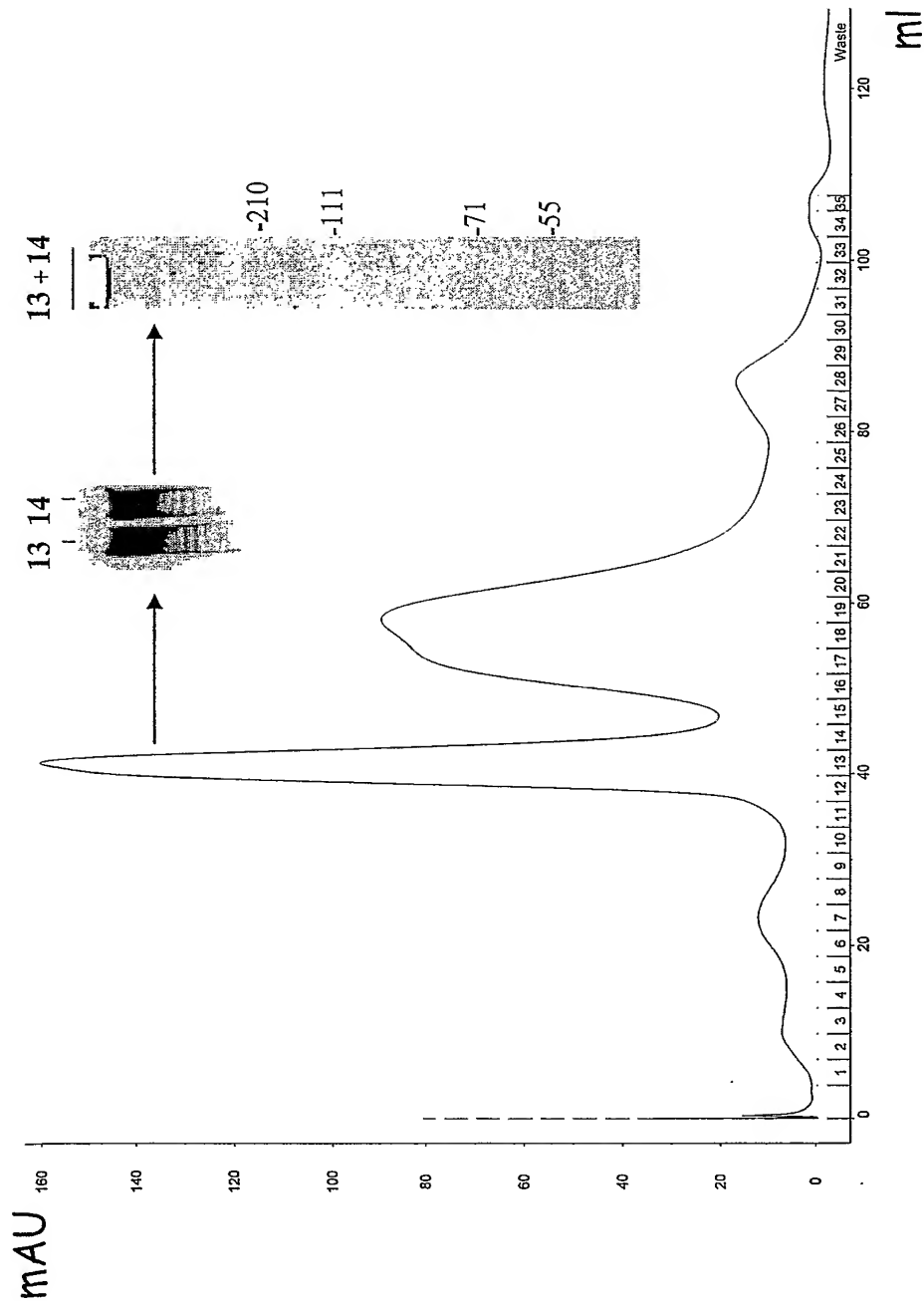
L. lactis

L. lactis + AI-1

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Figure 171

Gel filtration on Sepharyl HR 400



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Figure 172

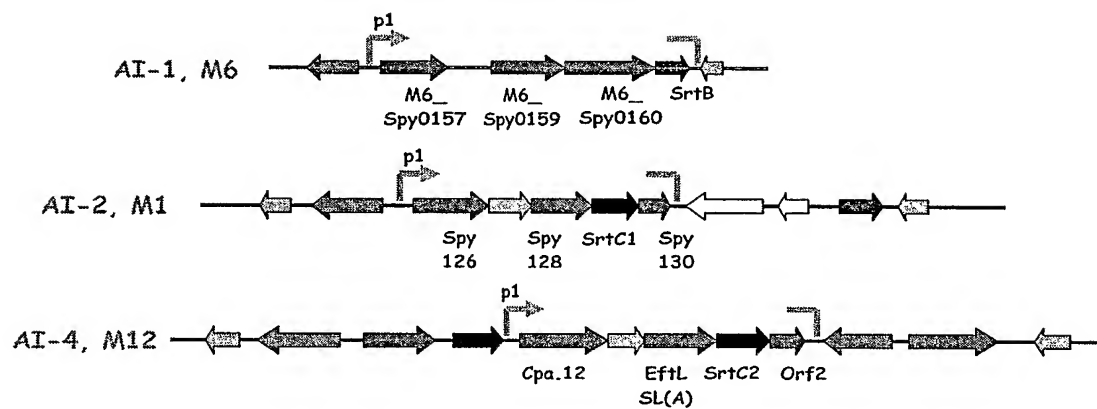
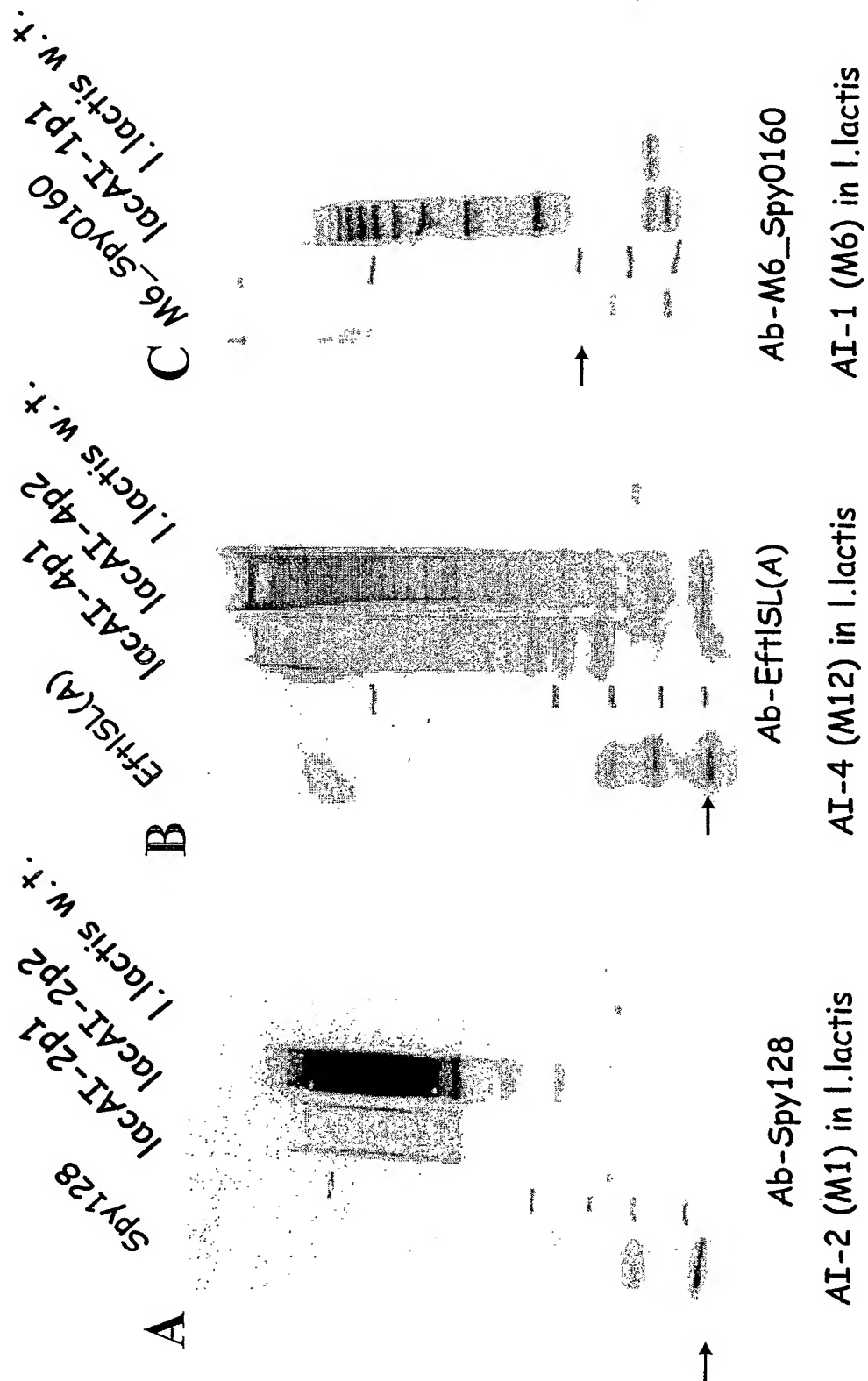


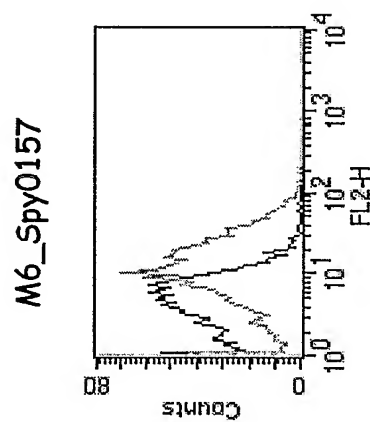
Figure 173



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Figure 174



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Figure 175

Orf2

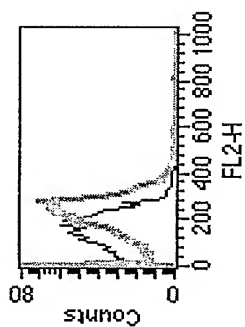
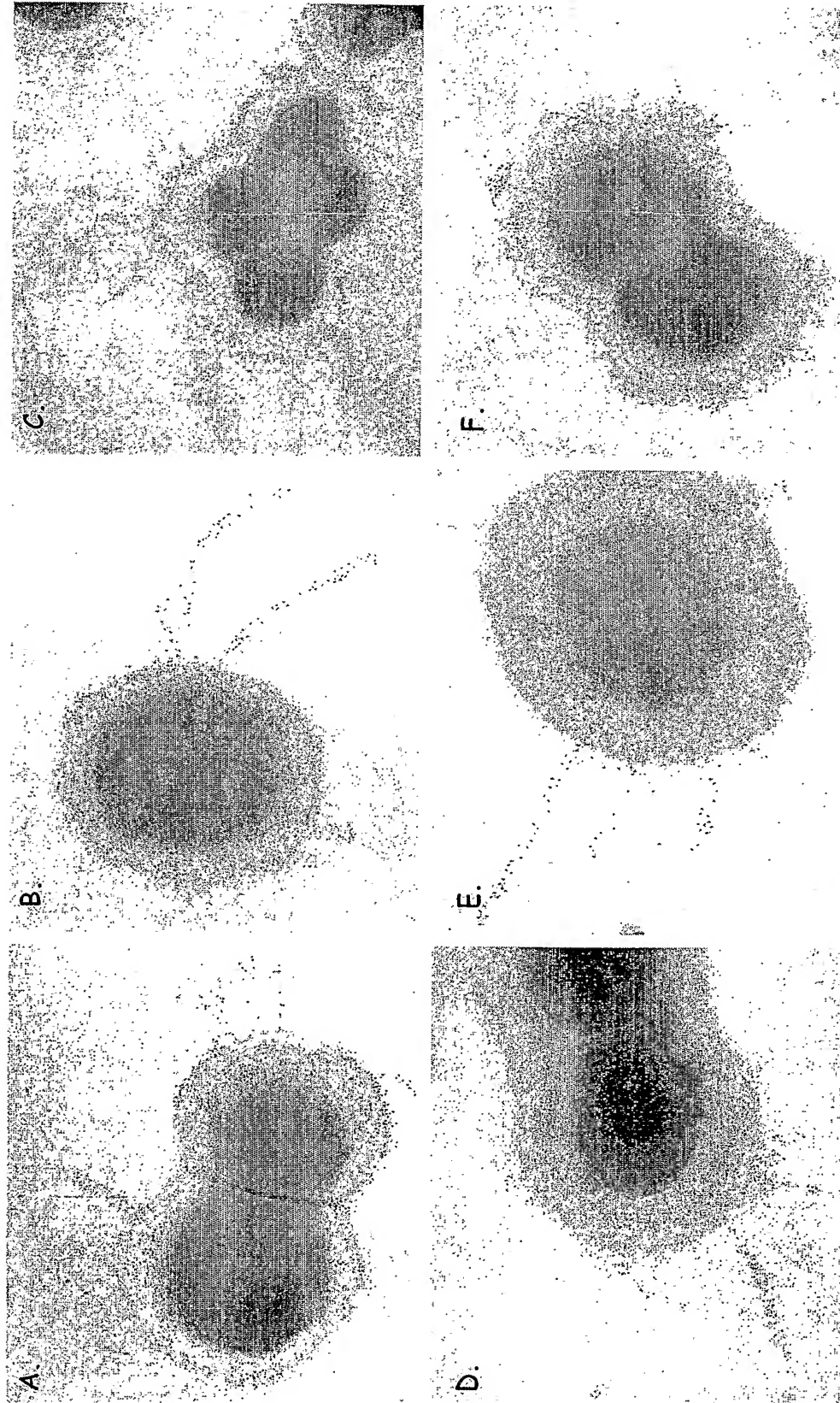


Figure 176



Immunogold labeling with antibodies against: A. B. C. D. E. M6_Spy0160; F. M6_Spy0159

Figure 177

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PCT/US2005/027239

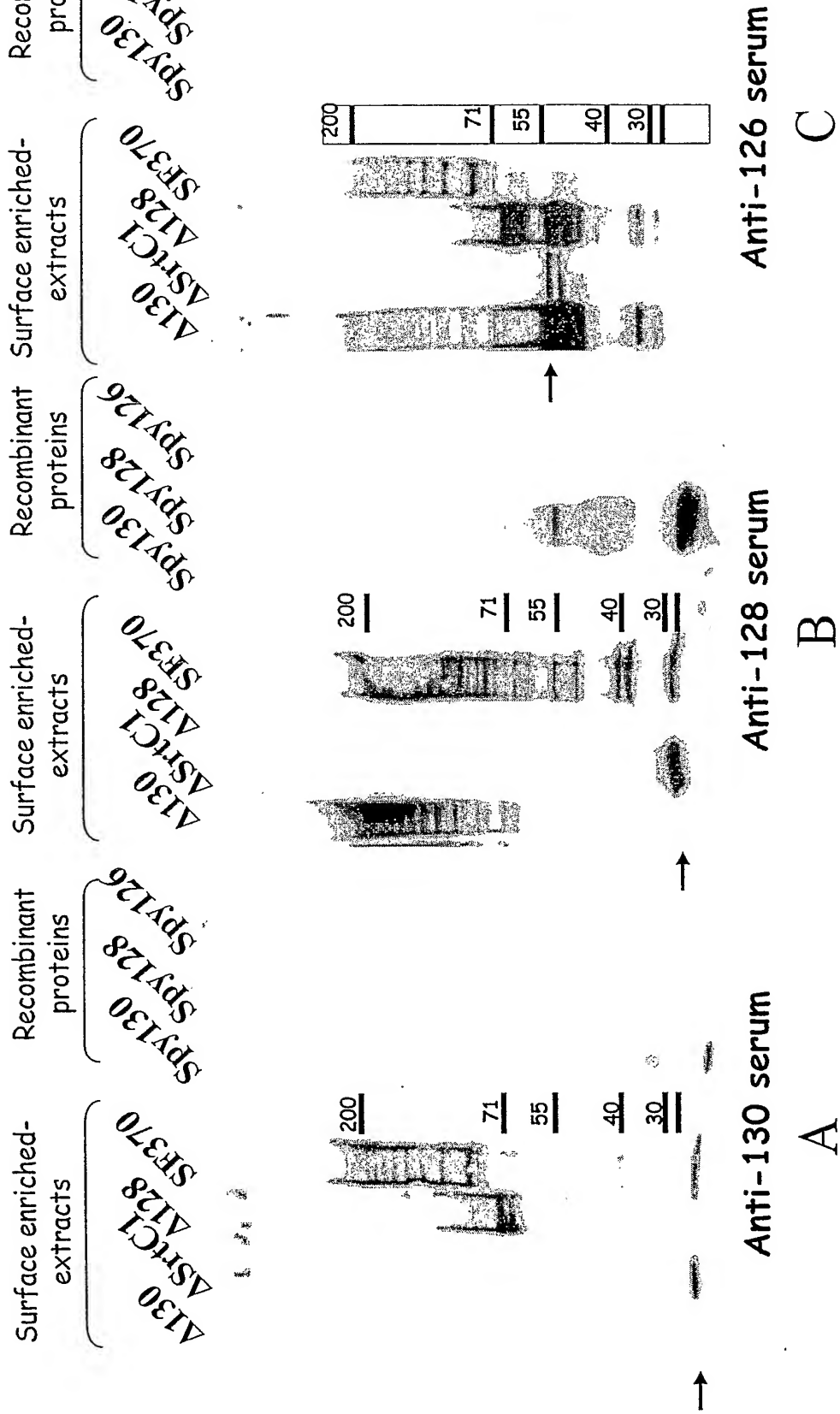
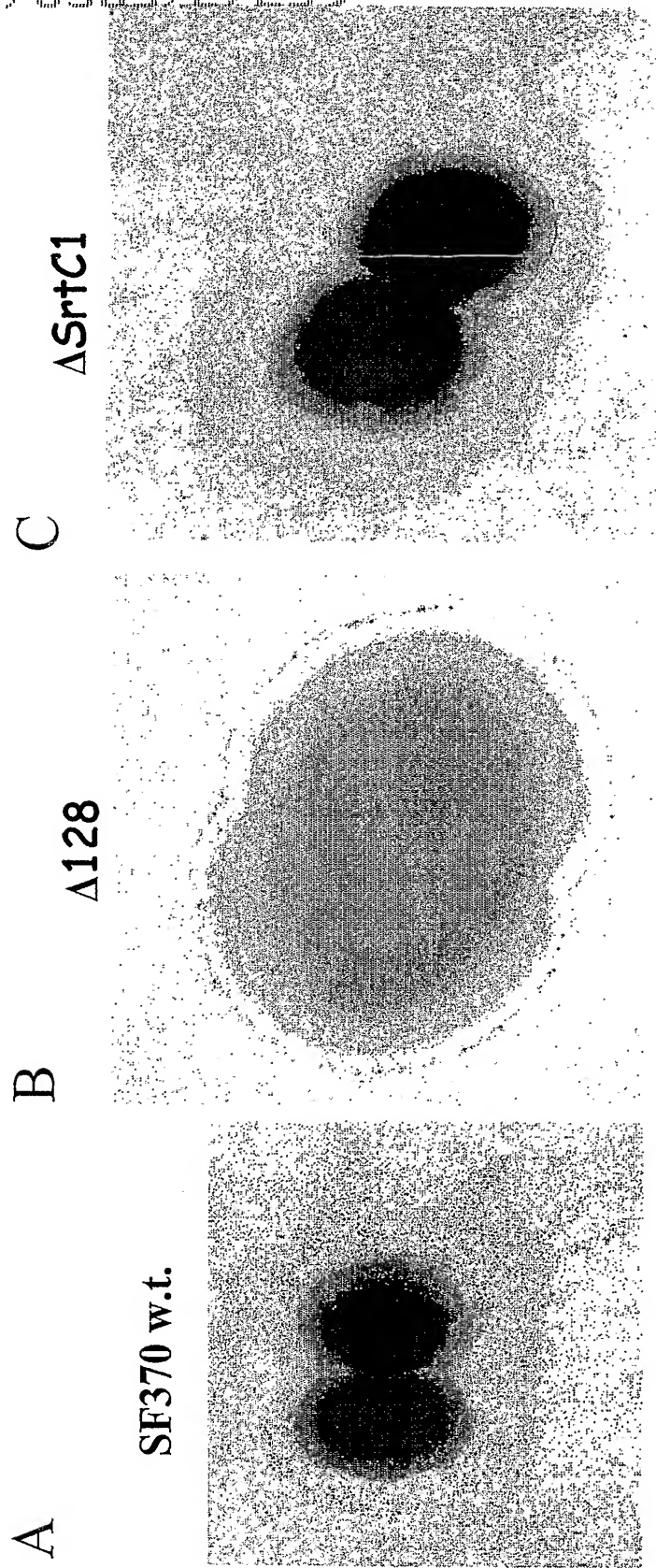


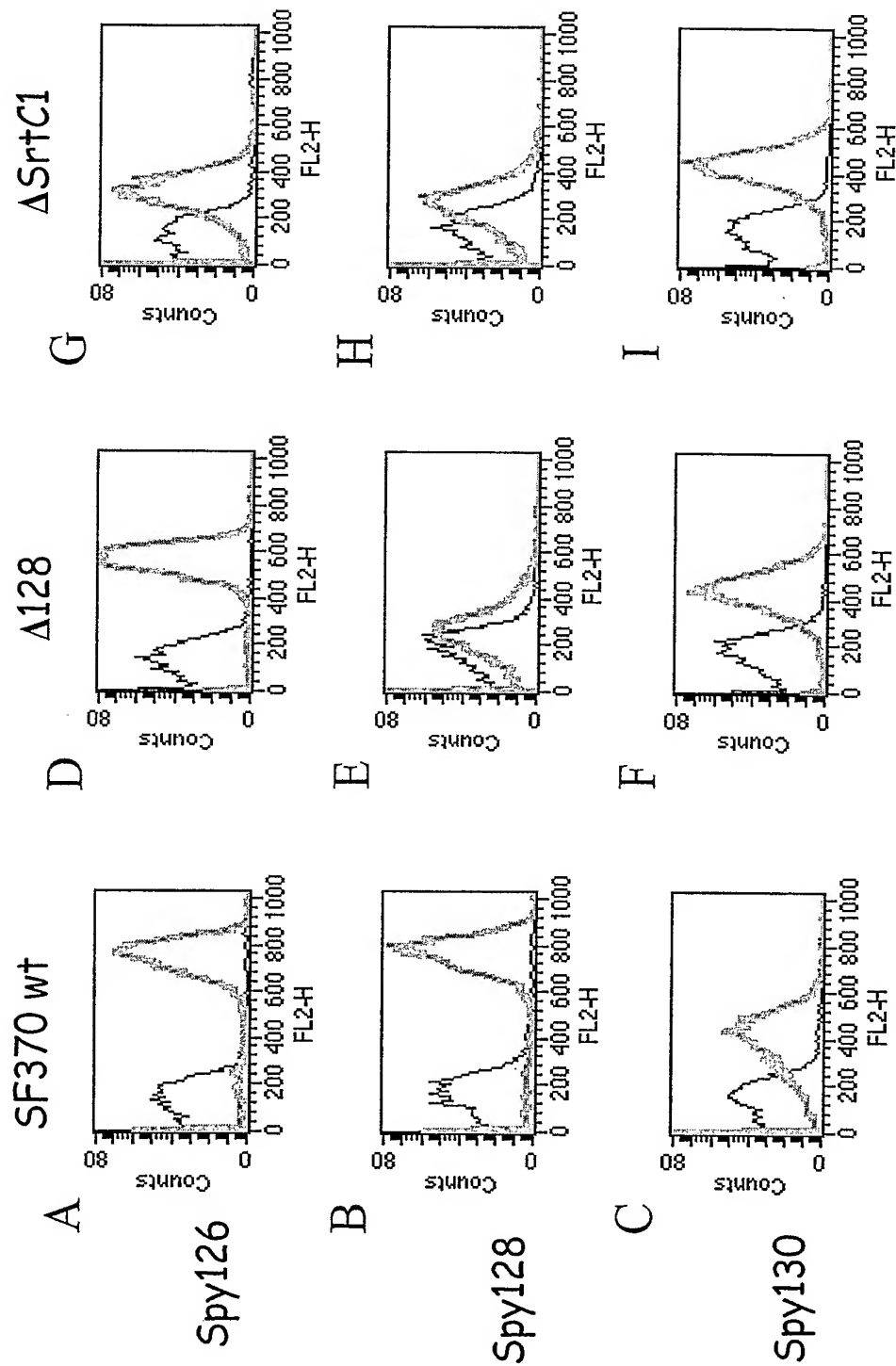
Figure 178



Immuno-gold labeling with sera against Spy128

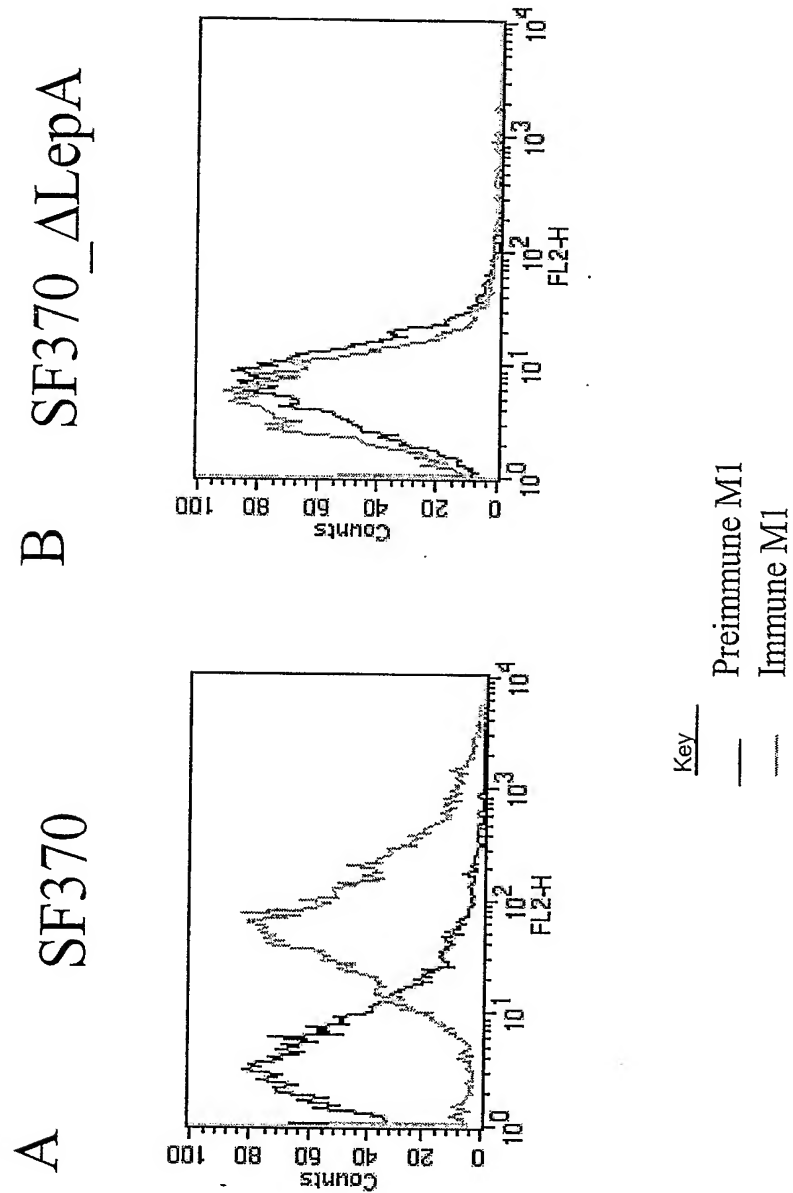
Comparison of wild type and mutant strain by Immunoelectron Microscopy show that Spy128- or SrtC1-lacking bacteria are not able to assemble pili. SrtC1, therefore, is absolutely required for pilus assembly but not for surface anchoring.

Figure 179



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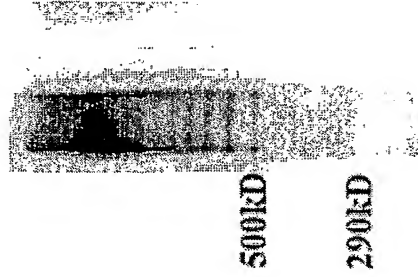
Figure 180



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Figure 181

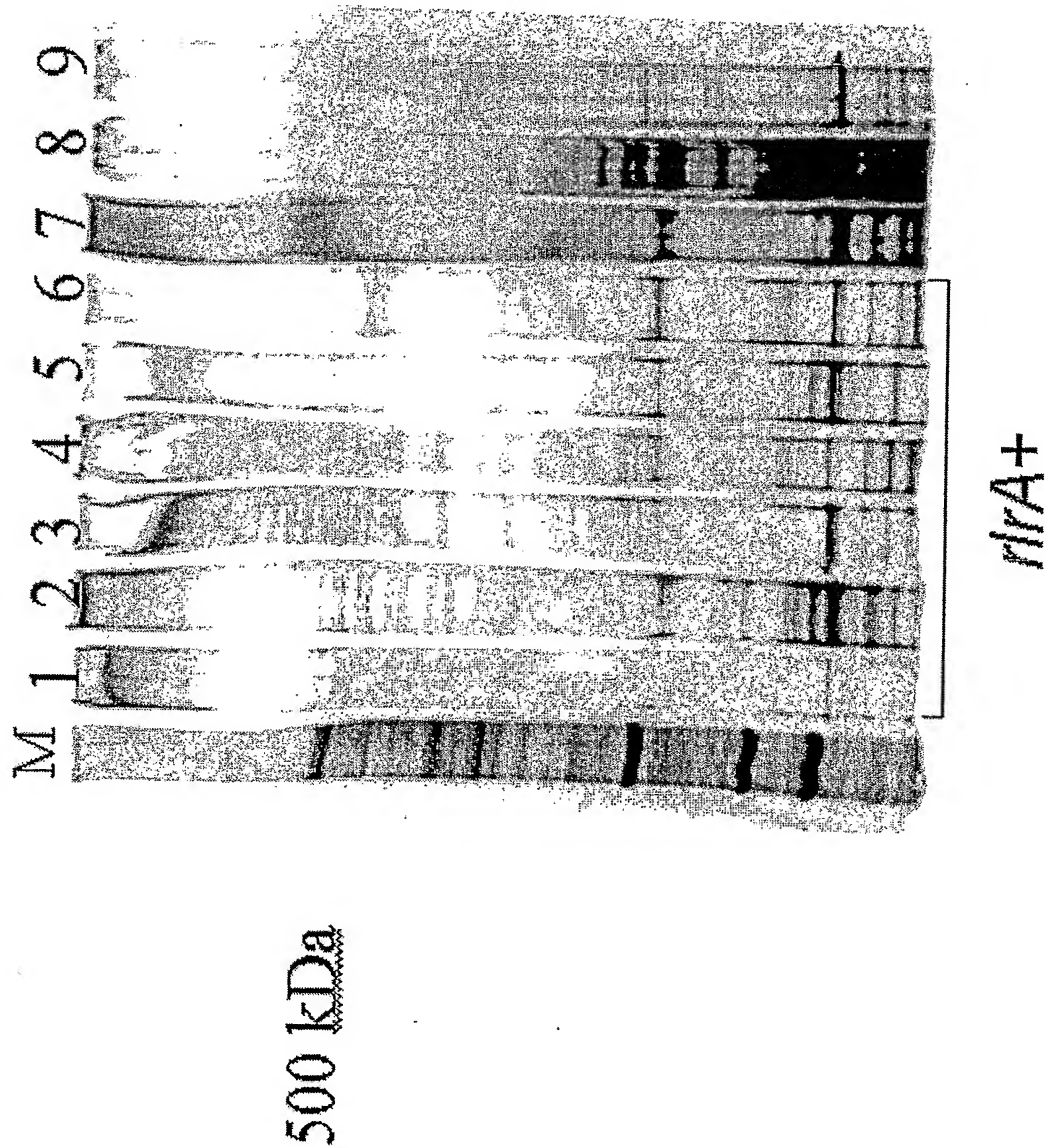
T4
T4Δ(ttgA-si)



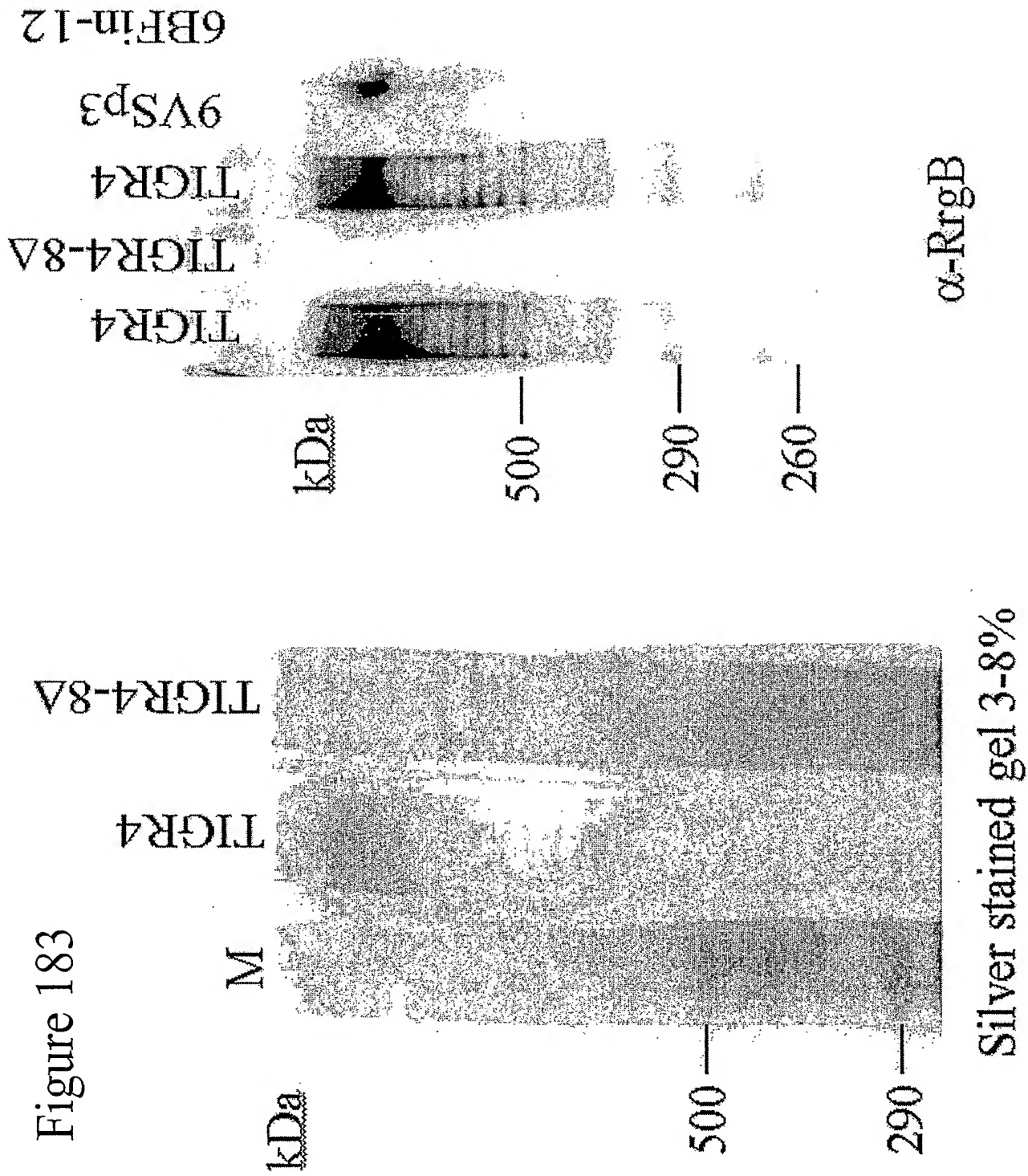
Pili form high molecular weight
polymers in gradient SDS-PAGE gels

α -RrgB

Figure 182



1. TIGR4
2. 19A Hungary-6
3. 6B Finland-12
4. 6B IJ
5. 9V Spain-3
6. 23F Taiwan-15
7. 19F IJ
8. 1 IJ
9. D39

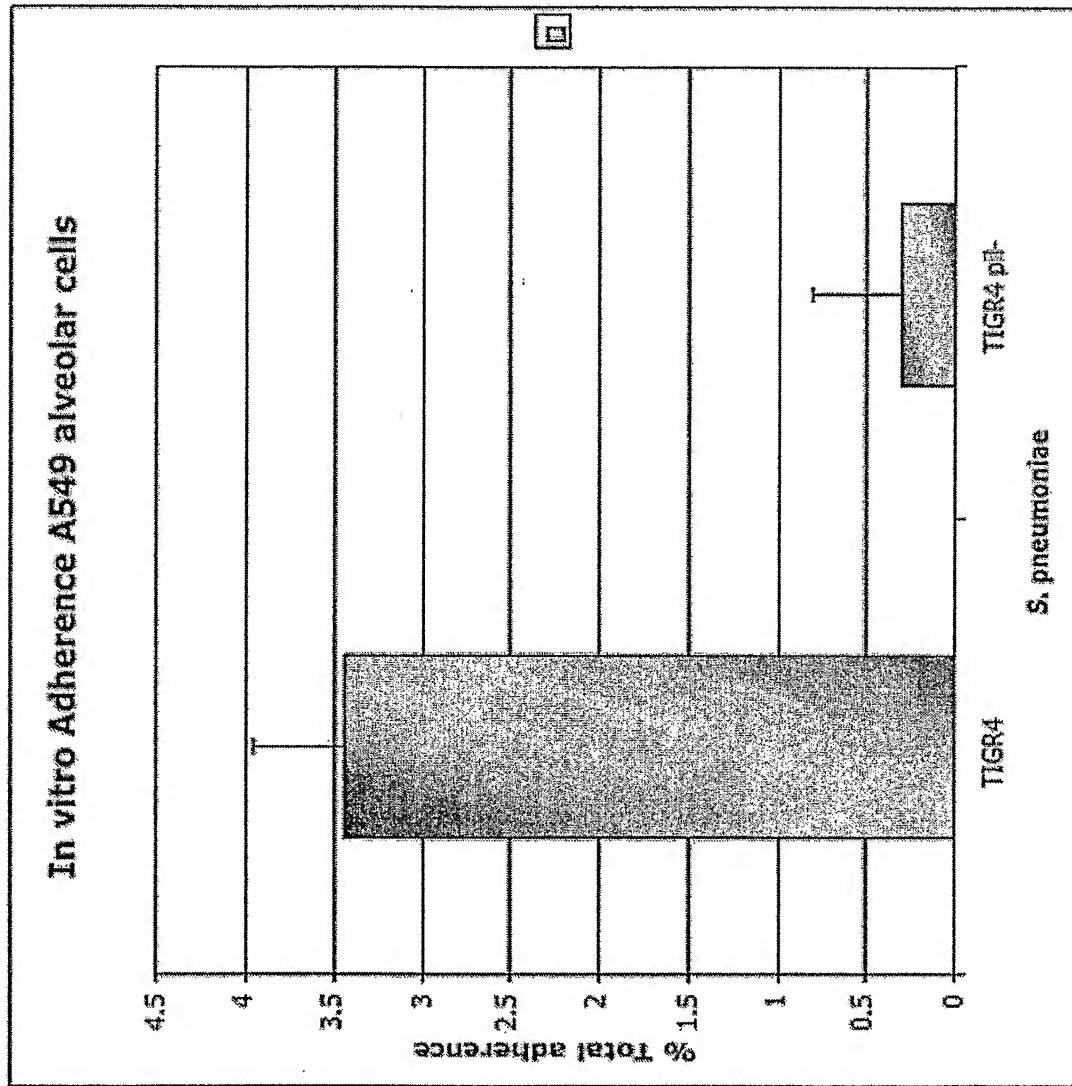


Anti-RrgB TIGR4 recognized the 9v pili

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Figure 184



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Figure 185



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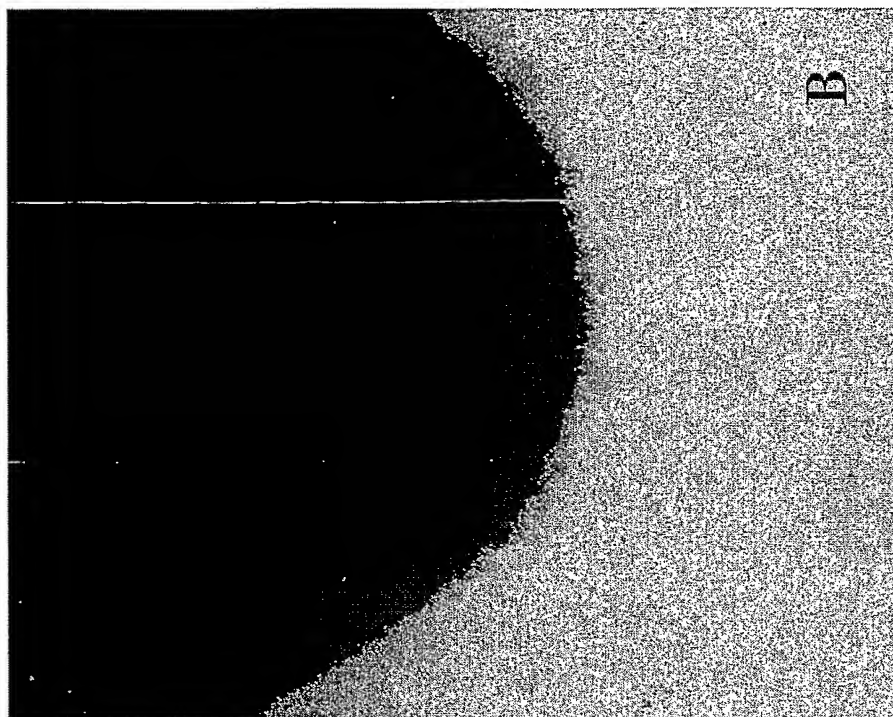


Figure 186

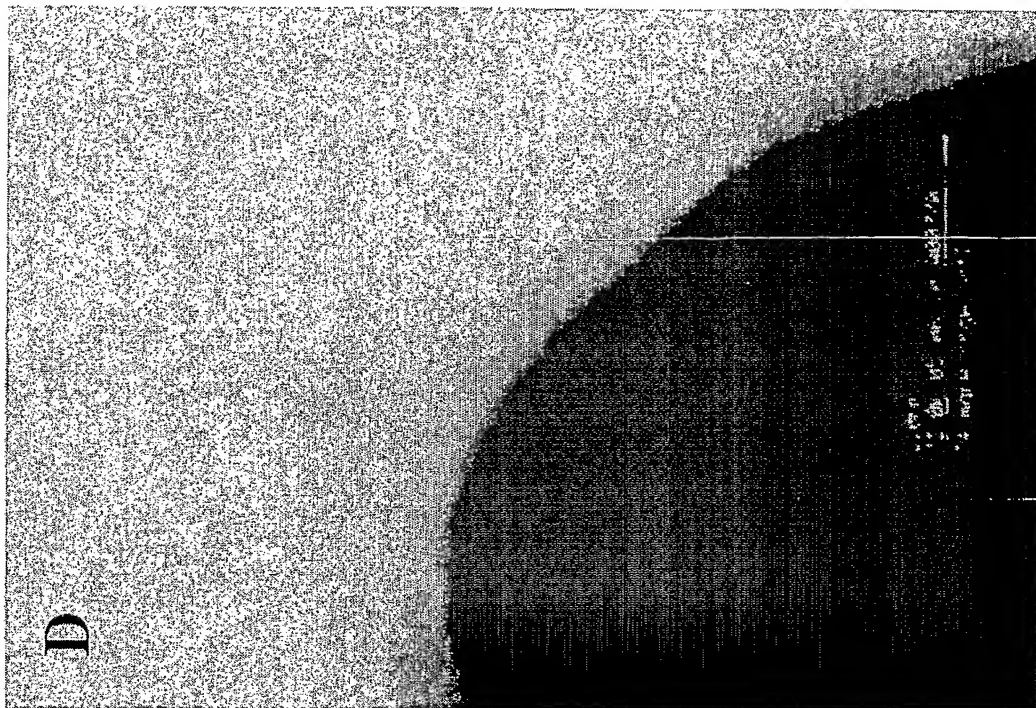


Figure 188

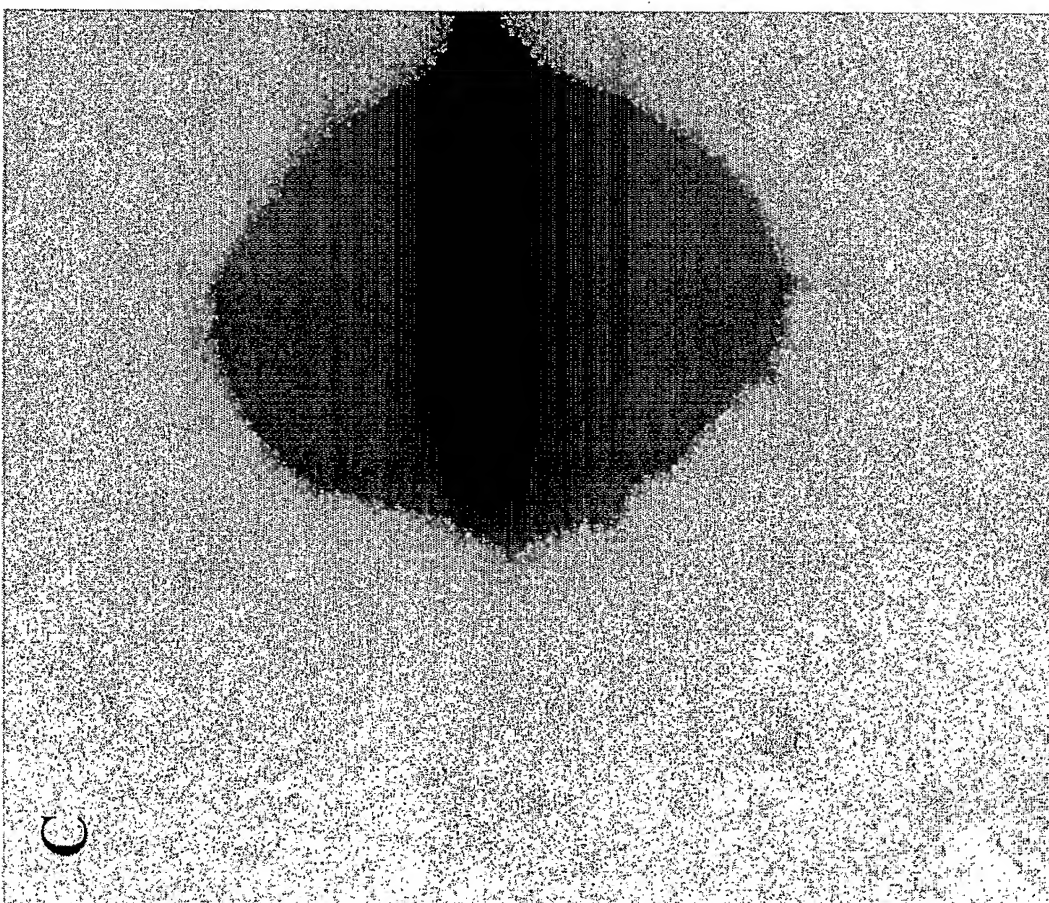


Figure 187

Figure 189

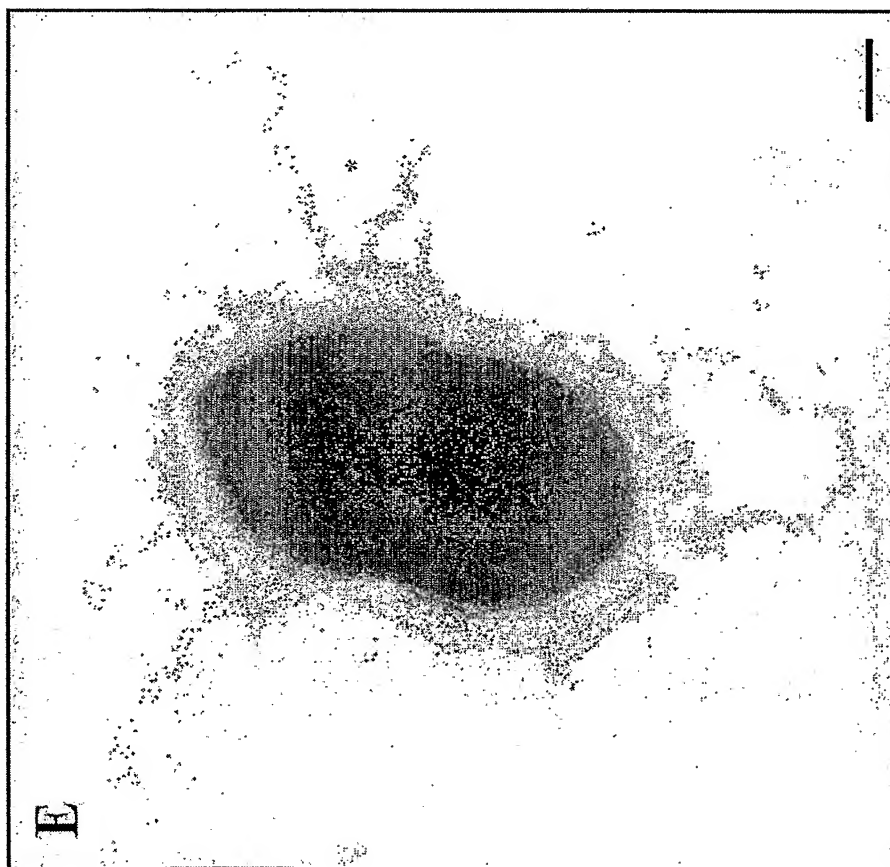


Figure 190

S. pneumoniae pili proteins: sp0462 (Rrg.A)

Expression and purification:

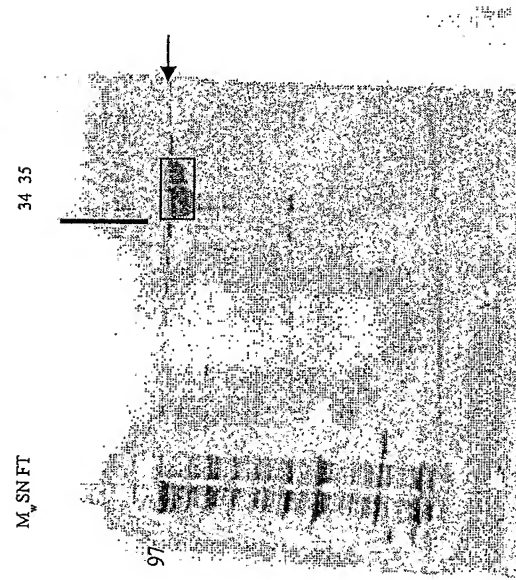
- pET 21b+-*rrg.A-6*
- purified in soluble form (stored at -80°C ; in $\text{NaCl}_{\text{physiol.}}$)



Results:

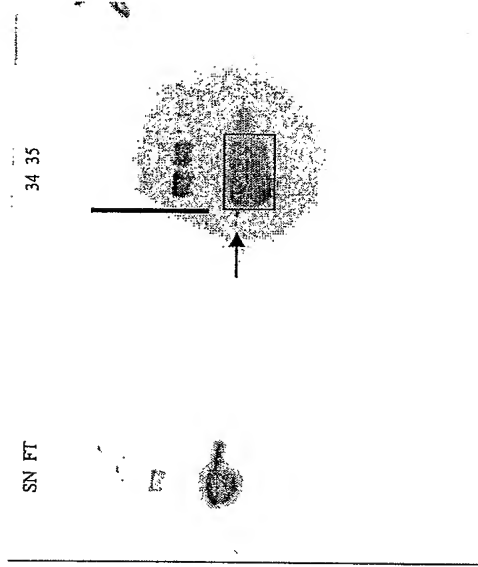
- protein conc.: 1,1 mg/ml

A



SDS-page

B



Western blot (anti-HIS)

S. pneumoniae pili proteins – antibody production (mice)

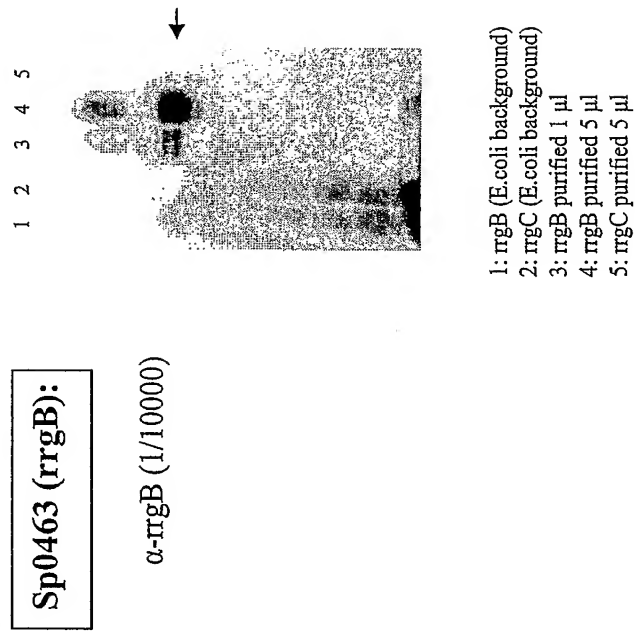


Figure 191

S. pneumoniae pili proteins – antibody production (mice)

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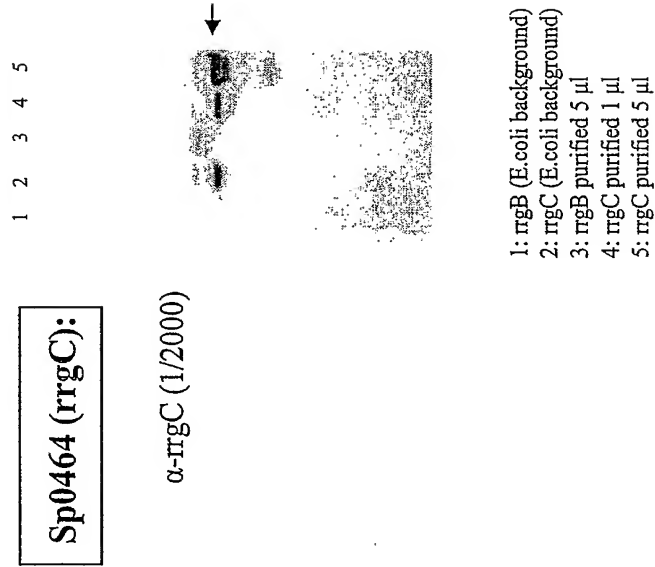
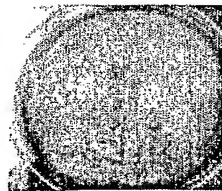


Figure 192

S. pneumoniae TIGR4 pilus purification I – cultivation + digestion



S. pneumoniae TIGR4
Blood plates
ON/37°C/13h

- Resuspension in PBS/washing
- Resuspension in PPB (4-6 plates/ml)
(20% sucrose, 10mM MgCl₂,
50mM NaPPi pH6.3)

- Digestion with Mutanolysin
(N-Acetyl Muramidase)
37°C, ~10 h

Pellet
SN

Sucrose Density
gradient centrifugation

T4

D39

T4/S

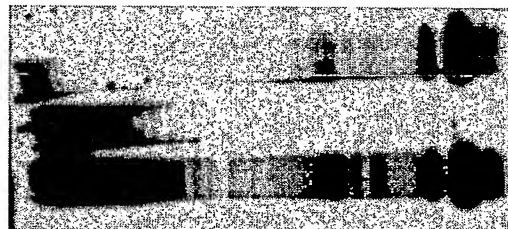


T4

S

SN

P



460 kDa

238 kDa

Western (1.AK. α-irgB)

Figure 193

S. pneumoniae TIGR4 pilus purification II - Sucrose density gradient centrifugation

PCT/US05/027239

950µl SN
25-56% linear sucrose gradient
SW40; 38000, 4°C, 16h



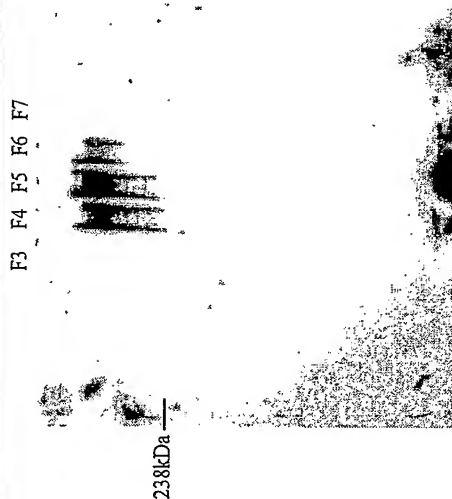
24 x 500 µl fractions
(Gradient master)



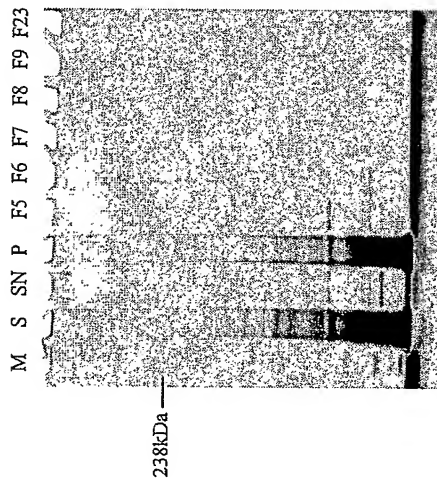
Gel filtration



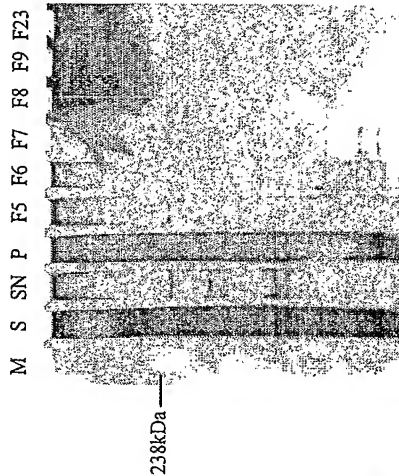
Slot blot (fractions sucrose grad.)



Western (I.A.K. α-rrgB)



Coomassie staining

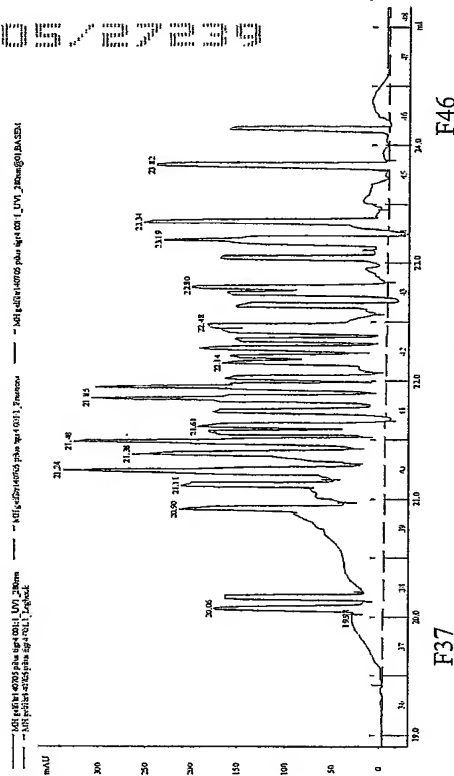
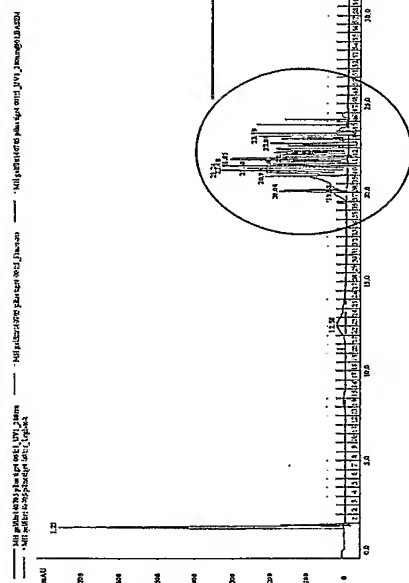


Silver Staining

Figure 194

S. pneumoniae TIGR4 pilus purification III – Gel filtration

400 µl Fr.5
Superdex 200



M L 37 38 39 40 41 42 43 44 45 46

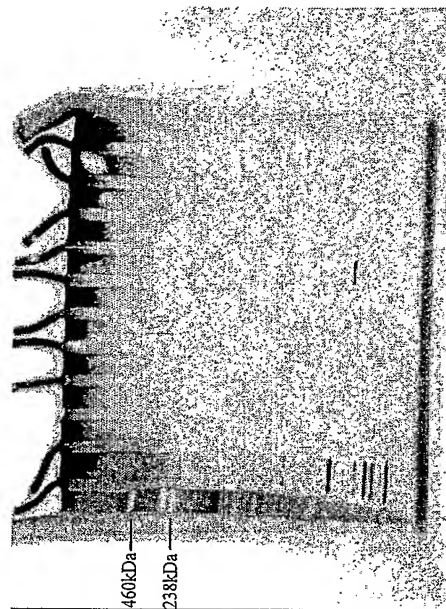


Figure 195

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14CSR -----GTTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
670 TGAGTTGTTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
6BF -----GTTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
6BSP -----GCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
19AH -----GTTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
23FPO -----TTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
19FTW -----TTTTTCATTATAAATCTTATGGGACTTTTTTGATACTCAAAAAGC
9VSP -----TTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
TIGR4 -----TTTAGGCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC
23FTW -----GCGCTTTTCATTATAAGTCTTATGGGACTTTTTTGATACTCAAAAAGC

14CSR CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
670 CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
6BF CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
6BSP CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
19AH CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
23FPO CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
19FTW CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
9VSP CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
TIGR4 CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT
23FTW CCTATAATCTCCACAGTGGGATTTACCCACTACAGAAATTATAGAGCCAGAAAAACACT

14CSR TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
670 TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
6BF TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
6BSP TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
19AH TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
23FPO TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
19FTW TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
9VSP TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
TIGR4 TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC
23FTW TTTGTTCACTAGCAGAACTAGAGAGCAGAAGTGTTTTCTGTTTCTGTTTACCCAAAAC

14CSR TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
670 TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
6BF TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
6BSP TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
19AH TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
23FPO TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
19FTW TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
9VSP TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
TIGR4 TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG
23FTW TGGGAAATATGGGGATAAGAATAGAGATGGCTTAGGAAGCCCCCTTTTTGTGTGTAGACAG

14CSR TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
670 TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
6BF TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
6BSP TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
19AH TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
23FPO TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
19FTW TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
9VSP TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
TIGR4 TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA
23FTW TACGATGAACCTATAACAAATAGTGAGCCTTTTGTAGCAATCATTCGACCCGTTTGTCAA

Figure 196A

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14CSR AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
670 AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
6BF AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
6BSP AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
19AH AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
23FPO AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
19FTW AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
9VSP AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
TIGR4 AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA
23FTW AAGCCTCTTTTCGGATATCTACAATTGTCTGATAGATGAGACGCTGTTGGCTAACATGCA

14CSR AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
670 AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
6BF AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
6BSP AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
19AH AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
23FPO AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
19FTW AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
9VSP AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
TIGR4 AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG
23FTW AATCTAAGGCAATCGTCAAAAAGTGATGTTCCCTTTGGGATACTGCTTTTTAACGTAAG

14CSR GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
670 GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
6BF GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
6BSP GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
19AH GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
23FPO GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
19FTW GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
9VSP GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
TIGR4 GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG
23FTW GCAGGTATTCTTTTCGTTGTAATAATAATCAATGGCTCTGTCAAATGCTCCTCTGAAGGAG

14CSR GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
670 GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
6BF GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
6BSP GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
19AH GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
23FPO GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
19FTW GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
9VSP GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
TIGR4 GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA
23FTW GAGGACTAATTAGAATATTGTATCCTGTAACAGAGGCAACTTTGTGAGTAAAATTCGGTA

14CSR AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
670 AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
6BF AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
6BSP AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
19AH AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
23FPO AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
19FTW AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
9VSP AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
TIGR4 AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA
23FTW AAATAATGGACTTTATTAAGTTTACATCTGCTTGATTATTTAAAATGATAAAAATCGGGA

Figure 196B

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14CSR TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
670 TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
6BF TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
6BSP TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
19AH TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
23FPO TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
19FTW TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
9VSP TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
TIGR4 TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT
23FTW TAGCAGGTAGTGAGGAAAAGATGGTTTCTGTCAAGTAGAGTGAGAAAAGGTACAGCCGAT

14CSR GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
670 GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
6BF GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
6BSP GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
19AH GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
23FPO GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
19FTW GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
9VSP GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
TIGR4 GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG
23FTW GCTGGTCGATAAECTCCTTCAATCTTCTGCTCAGTCATCCACTCTTGAACAATTGCTTTCG

14CSR AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
670 AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
6BF AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
6BSP AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
19AH AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
23FPO AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
19FTW AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
9VSP AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
TIGR4 AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG
23FTW AAATATGATACAGTGGCTTGTGCGCTTCAATCCCATAATGTTTCGTAATAATTATAATAGG

14CSR GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
670 GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
6BF GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
6BSP GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
19AH GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
23FPO GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
19FTW GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
9VSP GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
TIGR4 GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA
23FTW GAACTAGATTTTGTAAACCAAACAAAACGTTCTTGTTAAGAAAGTCAGTGCTGTTAAAA

14CSR AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
670 AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
6BF AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
6BSP AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
19AH AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
23FPO AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
19FTW AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
9VSP AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
TIGR4 AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT
23FTW AAGAAAGAGAATTTCGAAATGTCATTTCTTAAGATATTCTTGAACCTGGATAGTAGATGCT

Figure 196C

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14CSR TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
670 TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
6BF TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
6BSP TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
19AH TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
23FPO TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
19FTW TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
9VSP TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
TIGR4 TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT
23FTW TTCCTCTGTATGCTGAAGAATCAGTTGAATAGTATGAGTCTTTTTTCTTGATTCCATT

14CSR TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
670 TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
6BF TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
6BSP TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
19AH TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
23FPO TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
19FTW TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
9VSP TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
TIGR4 TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT
23FTW TGTCCCTGGAAAACGAAGAATTAGCAGAACAAATAAACCAAAAAGATATAATCCAGTTCCTT

14CSR CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
670 CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
6BF CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
6BSP CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
19AH CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
23FPO CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
19FTW CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
9VSP CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
TIGR4 CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA
23FTW CCTGAGTAAAAGTCATGTTGGCATGTGGCTCTAAGTAAGTTTGGCAATGTTCCATCAAAA

14CSR TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
670 TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
6BF TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
6BSP TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
19AH TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
23FPO TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
19FTW TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
9VSP TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
TIGR4 TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG
23FTW TCGGATACATAAAGAGGTTTTTTAATTTTTCAAACCTCTTTGGACTCAGGGAACCTCAAGTG

14CSR GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
670 GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
6BF GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
6BSP GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
19AH GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
23FPO GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
19FTW GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
9VSP GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
TIGR4 GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG
23FTW GAAATTCCCGACGTTTCCAAGTGAGTGCCACTAGTATGCTAAAATGAACATACTCGTCAG

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14CSR GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
670 GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
6BF GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
6BSP GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
19AH GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
23FPO GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
19FTW GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
9VSP GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
TIGR4 GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA
23FTW GTGTGATTTCTAACAGTTCATGACTGAGTTGAGAATTAGACTGCACAATCATATGTGTGA

14CSR CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
670 CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
6BF CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
6BSP CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
19AH CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
23FPO CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
19FTW CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
9VSP CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
TIGR4 CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA
23FTW CCCAATCCATACTTCCATCATTCAAATCATAAATCTCAATACCAAAATGAAACTGGAGGA

14CSR GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
670 GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
6BF GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
6BSP GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
19AH GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
23FPO GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
19FTW GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
9VSP GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
TIGR4 GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA
23FTW GTGCAATTAAAAACGAATGCGATATT CAGGACCAACTACTTGATTTTT CACAAGGTCCA

14CSR AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
670 AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
6BF AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
6BSP AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
19AH AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
23FPO AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
19FTW AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
9VSP AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
TIGR4 AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG
23FTW AACCTACTGAACGTAGTAACAAGCCACACTTTTGTGTCGACGCGGTAGCCTGTTGCGATGG

14CSR AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
670 AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
6BF AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
6BSP AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
19AH AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
23FPO AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
19FTW AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
9VSP AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
TIGR4 AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC
23FTW AAATATACTCTTTTGTGTAAATTCGTTAAAGCTTTGATTACCTTGTAGTAGAAGAAGC

Figure 196E

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14CSR GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
670 GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
6BF GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
6BSP GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
19AH GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
23FPO GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
19FTW GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
9VSP GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
TIGR4 GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT
23FTW GGAGTATTTTTAAATAGTTGATTGGTTATAAAGCTGATGGAAGTAATAATTCGTTTGAT

14CSR GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
670 GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
6BF GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
6BSP GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
19AH GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
23FPO GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
19FTW GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
9VSP GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
TIGR4 GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT
23FTW GAGAATGGTGTTCGATTAAATGAACCTGTTGCGTATCTAAATTAAATGTCAACTCTTCCT

14CSR CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
670 CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
6BF CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
6BSP CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
19AH CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
23FPO CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
19FTW CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
9VSP CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
TIGR4 CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA
23FTW CGAATGTTTCTTGTAATTCCTGCAAAATGCTTAGGAGACTTTTAGATTGTAATGAAGTTA

14CSR AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
670 AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
6BF AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
6BSP AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
19AH AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
23FPO AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
19FTW AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
9VSP AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
TIGR4 AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA
23FTW AAGTAGACAGTTCATCTAGTTCAATAGACCGAATATCCAATAATATATTTAAATGGTAA

14CSR TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
670 TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
6BF TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
6BSP TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
19AH TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
23FPO TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
19FTW TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
9VSP TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
TIGR4 TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC
23FTW TTTTATCTGTAATTCCTTTTTCAATGTATTTGTTTAGCATAGTTACCGAATCTTAGTTGC

Figure 196F

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14CSR ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
670 ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
6BF ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
6BSP ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
19AH ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
23FPO ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
19FTW ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
9VSP ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
TIGR4 ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG
23FTW ATATAGATAATTTTAAATTATTATAATACAAAAGAACTAATTGTCTTGTCAAAAAGGTTG

14CSR TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
670 TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
6BF TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
6BSP TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
19AH TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
23FPO TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
19FTW TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
9VSP TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
TIGR4 TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA
23FTW TGGAATTTCCGACTTTATTGATAAAACAGCATGTAATAAAAGGCATTTTAAAGATAGTAA

14CSR TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
670 TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
6BF TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
6BSP TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
19AH TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
23FPO TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
19FTW TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
9VSP TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
TIGR4 TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT
23FTW TGAGTATTGGTGGAGTTTATGGCTTATTTTTTTTATTAGAAAATATTTTTTTATCAAAAT

14CSR ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
670 ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
6BF ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
6BSP ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
19AH ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
23FPO ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
19FTW ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
9VSP ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
TIGR4 ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA
23FTW ATTGTCGTTCTATAAAAAAATATGTGATAAAAAATATCTATTGTGATGGAAGTTGTTTTAA

14CSR TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
670 TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
6BF TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
6BSP TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
19AH TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
23FPO TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
19FTW TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
9VSP TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
TIGR4 TTTATACTAGGATAGTTAATAGTAATACTATACTATACTATATTGTATACAAGTGTGTCA
23FTW TTTATACTAGGATAGTTAATAGTAATACTATACTATACTA-----TATTGTATACAAGTGTGTCA

Figure 196G

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14CSR TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
670 TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
6BF TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
6BSP TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
19AH TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
23FPO TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
19FTW TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
9VSP TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
TIGR4 TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT
23FTW TTGCCAGGTTGAGAAGATAGCTATAACGCACCTTTTATACGCTTTTGCTACGTTTGTAGT

14CSR GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
670 GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
6BF GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
6BSP GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
19AH GAACGGATTAACCTCAGCATGAGATAAATTTTATCAGAA--TAAGTAATCCGTTTCTTCGT
23FPO GAACGGATTAACCTCAGCATGAGATAAATTTTATCAGAA--TAAGTAATCCGTTTCTTCGT
19FTW GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
9VSP GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
TIGR4 GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT
23FTW GAACGGATTAACCTCAG--TGAGATAAATTTTATCAGAACATAAGTAATCCGTTTCTTCGT

14CSR GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
670 GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
6BF GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
6BSP GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
19AH GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
23FPO GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
19FTW GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
9VSP GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
TIGR4 GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC
23FTW GTATACAGATTGAAAGTACCTATGAATCATAGAAGGATTAACCTTGTTCATGAATAATGC

14CSR TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
670 TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
6BF TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
6BSP TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
19AH TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
23FPO TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
19FTW TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
9VSP TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
TIGR4 TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC
23FTW TTAACAGGGAGACACACATGAAAAAGTAAGAAAGATATTTT CAGAAGGCAGTTGCAGGAC

14CSR TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
670 TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
6BF TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
6BSP TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
19AH TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
23FPO TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
19FTW TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
9VSP TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
TIGR4 TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG
23FTW TGTGCTGTATATCTCAGTTGACAGCTTTTCTTCGATAGTTGCTTTAGCAGAAACGCCTG

Figure 196H

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14CSR AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
670 AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
6BF AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
6BSP AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
19AH AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
23FPO AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
19FTW AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
9VSP AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
TIGR4 AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC
23FTW AAACCCAGTCCAGCGATAGGAAAAGTAGTGATTAAGGAGACAGGCGAAGGAGGAGCGCTTC

14CSR TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
670 TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
6BF TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
6BSP TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
19AH TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
23FPO TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
19FTW TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
9VSP TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGAATGGCACAACCTGTTTCGCAAAGGA
TIGR4 TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA
23FTW TAGGAGATGCCGTCTTTGAGTTGAAAAACAATACGGATGGCACAACCTGTTTCGCAAAGGA

14CSR CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
670 CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
6BF CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
6BSP CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
19AH CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
23FPO CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
19FTW CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
9VSP CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
TIGR4 CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA
23FTW CAGAGGCGCAAAACAGGAGAAGCGATATTTTCAACATAAAACCTGGGACATACACCTTGA

14CSR CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
670 CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
6BF CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
6BSP CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
19AH CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
23FPO CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
19FTW CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
9VSP CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAACGGACTGTTGAAGTTG
TIGR4 CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG
23FTW CAGAAGCCCAACCTCCAGTTGGTTATAAACCTCTACTAAACAATGGACTGTTGAAGTTG

14CSR AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
670 AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
6BF AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
6BSP AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
19AH AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
23FPO AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
19FTW AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
9VSP AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
TIGR4 AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT
23FTW AGAAGAATGGTCCGACGACTGTCCAAGGTGAACAGGTAGAAAATCGAGAAGAGGCTCTAT

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14CSR      CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
670        CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
6BF        CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
6BSP       CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
19AH       CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
23FPO      CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
19FTW      CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
9VSP       CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
TIGR4      CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
23FTW      CTGACCAGTATCCACAAACAGGGACTTATCCAGATGTTCAAACACCTTATCAGATTATTA
*****

14CSR      AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
670        AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
6BF        AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
6BSP       AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
19AH       AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
23FPO      AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
19FTW      AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
9VSP       AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
TIGR4      AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
23FTW      AGGTAGATGGTTCGGAAAAAACGGACAGCACAAGGCGTTGAATCCGAATCCATATGAAC
*****

14CSR      GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
670        GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
6BF        GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
6BSP       GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
19AH       GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
23FPO      GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
19FTW      GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
9VSP       GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
TIGR4      GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
23FTW      GTGTGATTCCAGAAGGTACACTTTCAAAGAGAATTTATCAAGTGAATAATTTGGATGATA
*****

14CSR      ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
670        ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
6BF        ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
6BSP       ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
19AH       ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
23FPO      ACCAATATGGAATCGAGTTGACGGTTAGTGGTAAAACGACGGTTGAAACGAAAGAAGCCT
19FTW      ACCAATATGGAATCGAATTGACGGTTAGTGGGAAAACAGTGTATGAACGAAAAGATAAGT
9VSP       ACCAATATGGAATCGAATTGACGGTTAGTGGGAAAACAGTGTATGAACGAAAAGATAAGT
TIGR4      ACCAATATGGAATCGAATTGACGGTTAGTGGGAAAACAGTGTATGAACGAAAAGATAAGT
23FTW      ACCAATATGGAATCGAATTGACGGTTAGTGGGAAAACAGTGTATGAACGAAAAGATAAGT
*****

14CSR      CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
670        CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
6BF        CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
6BSP       CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
19AH       CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
23FPO      CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
19FTW      CTACTCCGCTAGATGTTGTTATTCTATTAGATAACTCCAATAGTATGAGTAATATTCGAC
9VSP       CTGTGCCGCTGGATGTCGTTATCTTGCTCGATAACTCAAATAGTATGAGTAACATTTCGAA
TIGR4      CTGTGCCGCTGGATGTCGTTATCTTGCTCGATAACTCAAATAGTATGAGTAACATTTCGAA
23FTW      CTGTGCCGCTGGATGTCGTTATCTTGCTCGATAACTCAAATAGTATGAGTAACATTTCGAA
**      *****

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Figure 196J

Figure 196K

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14CSR CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
670 CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
6BF CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
6BSP CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
19AH CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
23FPO CAGAGGAATTGAACAAAGACAAATTGATGTATCAATTCGGCGCGACTTTTACCCAGAAGG
19FTW CAGAAGATCATGATGGAATAGATTGATGTACCAATTCGGTGCCACTTTTACTCAGAAAG
9VSP CAGAAGACCATGATGGAATAGATTGATGTACCAATTCGGTGCCACTTTTACTCAGAAAG
TIGR4 CAGAAGACCATGATGGAATAGATTGATGTACCAATTCGGTGCCACTTTTACTCAGAAAG
23FTW CAGAAGACCATGATGGAATAGATTGATGTACCAATTCGGTGCCACTTTTACTCAGAAAG
***** * * * *
14CSR CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
670 CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
6BF CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
6BSP CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
19AH CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
23FPO CTTTGATGACCGCTGATGATATCTTGACAAAGCAGGCAAGACCAAACAGTAAAAAGGTTA
19FTW CTTTGATGAAGGCAGATGAGATTTTGACACAACAAGCGAGACAAAATAGTCAAAAAGTCA
9VSP CTTTGATGAAGGCCGATGAGATTTTGACACAACAAGCGAGACAAAATAGTCAAAAAGTCA
TIGR4 CTTTGATGAAGGCAGATGAGATTTTGACACAACAAGCGAGACAAAATAGTCAAAAAGTCA
23FTW CTTTGATGAAGGCAGATGAGATTTTGACACAACAAGCGAGACAAAATAGTCAAAAAGTCA
***** * * * *
14CSR TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
670 TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
6BF TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
6BSP TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
19AH TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
23FPO TTTTCCACATTACAGATGGTGTTCGGACTATGTCATATCCAATTAATTTTAAATATACAG
19FTW TTTTCCATATTACGGATGGTGTCCCAACTATGTCGATATCCGATTAATTTTAAATCATGCTA
9VSP TTTTCCATATTACGGATGGTGTCCCAACTATGTCGATATCCGATTAATTTTAAATCATGCTA
TIGR4 TTTTCCATATTACGGATGGTGTCCCAACTATGTCGATATCCGATTAATTTTAAATCATGCTA
23FTW TTTTCCATATTACGGATGGTGTCCCAACTATGTCGATATCCGATTAATTTTAAATCATGCTA
***** * * * *
14CSR GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
670 GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
6BF GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
6BSP GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
19AH GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
23FPO GAACGACGCAATCGTACAGAAGCTCAGCTGAATA-ATTTTAAAGCAAAAACCTCCAAATAGT
19FTW CGTTTGCTCCATCATATCAAAATCAACTAAATGCATTTTTTAGTAAAT-CTCCTAATAAA
9VSP CGTTTGCTCCATCATATCAAAATCAACTAAATGCATTTTTTAGTAAAT-CTCCTAATAAA
TIGR4 CGTTTGCTCCATCATATCAAAATCAACTAAATGCATTTTTTAGTAAAT-CTCCTAATAAA
23FTW CGTTTGCTCCATCATATCAAAATCAACTAAATGCATTTTTTAGTAAAT-CTCCTAATAAA
* * * * *
14CSR AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
670 AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
6BF AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
6BSP AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
19AH AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
23FPO AGCGGGATATTACTGGAGGACTTTGTTACATGGTCAGCAGATGGTGAACATAAGATTGTT
19FTW GATGGAATACTATTAAAGTGATTTTATTACGCAAGCAACTAGTGGAGAACATACAATTGTA
9VSP GATGGAATACTATTAAAGTGATTTTATTACGCAAGCAACTAGTGGAGAACATACAATTGTA
TIGR4 GATGGAATACTATTAAAGTGATTTTATTACGCAAGCAACTAGTGGAGAACATACAATTGTA
23FTW GATGGAATACTATTAAAGTGATTTTATTACGCAAGCAACTAGTGGAGAACATACAATTGTA
* * * * *

Figure 196L

14CSR	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
670	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
6BF	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
6BSP	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
19AH	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
23FPO	CGTGGAGATGGTGAAAGTTATCAGATGTTTACGAAGAAACCTGT-----AACAGACCAA
19FTW	CGCGGAGATGGGCAAAGTTACCAGATGTTTACAGATAAGACAGGTTTATGAAAAAGGTGCT
9VSP	CGCGGAGATGGGCAAAGTTACCAGATGTTTACAGATAAGACAGGTTTATGAAAAAGGTGCT
TIGR4	CGCGGAGATGGGCAAAGTTACCAGATGTTTACAGATAAGACAGGTTTATGAAAAAGGTGCT
23FTW	CGCGGAGATGGGCAAAGTTACCAGATGTTTACAGATAAGACAGGTTTATGAAAAAGGTGCT ** * * * * *
14CSR	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
670	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
6BF	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
6BSP	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
19AH	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
23FPO	TACGGAGTTCATCAAAAT---ACTTTCAATCACCTCCATGGAGCAGAGAGCTAAATTAGTT
19FTW	CCTGCAGCTTTCCCAGTTAAACCTGAAAAATATTCTGAAATGAAGCGGCTGGTGTATGCA
9VSP	CCTGCAGCTTTCCCAGTTAAACCTGAAAAATATTCTGAAATGAAGCGGCTGGTGTATGCA
TIGR4	CCTGCAGCTTTCCCAGTTAAACCTGAAAAATATTCTGAAATGAAGCGGCTGGTGTATGCA
23FTW	CCTGCAGCTTTCCCAGTTAAACCTGAAAAATATTCTGAAATGAAGCGGCTGGTGTATGCA * * * * *
14CSR	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
670	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
6BF	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
6BSP	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
19AH	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
23FPO	TCAGCGGGATATAGGTTCTATGGAAC T G A C T T G T A T T T A T A T T G G C G T G A T A G T A T T C T A
19FTW	GTTTATAGGCGATCCAATTAATGGTGGATATATTGGCTTAATTGGAGAGAGAGTATTCTG
9VSP	GTTTATAGGCGATCCAATTAATGGTGGATATATTGGCTTAATTGGAGAGAGAGTATTCTG
TIGR4	GTTTATAGGCGATCCAATTAATGGTGGATATATTGGCTTAATTGGAGAGAGAGTATTCTG
23FTW	GTTTATAGGCGATCCAATTAATGGTGGATATATTGGCTTAATTGGAGAGAGAGTATTCTG * * * * *
14CSR	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
670	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
6BF	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
6BSP	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
19AH	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
23FPO	GCCTATCCATTTA ACT CTAGTACCGATTGGATTACCAACCATGGTGACCCTACGACTTGG
19FTW	GCTTATCCGTTTTAATTC TA A T A C T G C T A A A A T T A C C A A T C A T G G T G C C C T A C A A G A T G G
9VSP	GCTTATCCGTTTTAATTC TA A T A C T G C T A A A A T T A C C A A T C A T G G T G C C C T A C A A G A T G G
TIGR4	GCTTATCCGTTTTAATTC TA A T A C T G C T A A A A T T A C C A A T C A T G G T G C C C T A C A A G A T G G
23FTW	GCTTATCCGTTTTAATTC TA A T A C T G C T A A A A T T A C C A A T C A T G G T G C C C T A C A A G A T G G * * * * *
14CSR	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
670	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
6BF	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
6BSP	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
19AH	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
23FPO	TATTATAACGGAAATATGGCTCAGGATGGCTATGATGTCTTCACTGTTGGGGTTGGTGTA
19FTW	TACTATAACGGGAATATTGCTCCTGATGGGTATGATGTCTTTACGGTAGGTATTGGTATT
9VSP	TACTATAACGGGAATATTGCTCCTGATGGGTATGATGTCTTTACGGTAGGTATTGGTATT
TIGR4	TACTATAACGGGAATATTGCTCCTGATGGGTATGATGTCTTTACGGTAGGTATTGGTATT
23FTW	TACTATAACGGGAATATTGCTCCTGATGGGTATGATGTCTTTACGGTAGGTATTGGTATT * * * * *

Figure 196M

[illegible]

Figure 196N

14CSR AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
670 AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
6BF AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
6BSP AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
19AH AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
23FPO AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
19FTW AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
9VSP AATGATGGTGGCTTGCTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
TIGR4 AATGATGGTGGTTTGTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT
23FTW AATGATGGTGGTTTGTAAAAAATGCAAAAGTGTCTATGATACGACTGAGAAAAGGATT

14CSR CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
670 CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
6BF CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
6BSP CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
19AH CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
23FPO CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
19FTW CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
9VSP CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
TIGR4 CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC
23FTW CGTGTAACAGGTTTGTACCTTGAACGGGTGAAAAAGTTACATTGACTTATAATGTTTCGC

14CSR TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
670 TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
6BF TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
6BSP TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
19AH TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
23FPO TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
19FTW TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
9VSP TTGAATGACCAATTTGTAAGCAATAAATTCTATGACACGAATGGTCGAACAACCCCTACAC
TIGR4 TTGAATGATGAGTTTGTAGCAATAAATTTTATGATACCAATGGTCGAACAACCCCTACAT
23FTW TTGAATGATGAGTTTGTAGCAATAAATTTTATGATACCAATGGTCGAACAACCCCTACAT

14CSR CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
670 CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
6BF CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
6BSP CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
19AH CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
23FPO CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
19FTW CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
9VSP CCTAAGGAAGTAGAAAAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
TIGR4 CCTAAGGAAGTAGAACAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA
23FTW CCTAAGGAAGTAGAACAGAACACAGTGC GCGACTTCCCGATTCCCTAAGATTTCGTGATGTA

14CSR CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
670 CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
6BF CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
6BSP CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
19AH CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
23FPO CGAAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
19FTW CGAAATATCCAGCAATTACGATTG CAAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
9VSP CGAAATATCCAGCAATTACGATTG CAAAAGAGAAAAAACTTGGTGAAATTGAGTTTATT
TIGR4 CGGAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGACATTGAGTTTATT
23FTW CGGAAGTATCCAGAAATCACAATTC AAAAGAGAAAAAACTTGGTGACATTGAGTTTATT

PCT/US05/27239 408/487

14CSR AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
670 AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
6BF AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
6BSP AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
19AH AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
23FPO AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
19FTW AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
9VSP AAGATCAATAAGAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
TIGR4 AAGGTCAATAAAAAATGATAAAAAACCACTGAGAGGTGCGGTCTTTAGTCTTCAAAAACAA
23FTW AAGGTCAATAAAAAATGATAAAAAACCACTGAGAGATGCGGTCTTTAGTCTTCAAAAACAA
*** **

14CSR CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
670 CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
6BF CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
6BSP CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
19AH CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
23FPO CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
19FTW CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
9VSP CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
TIGR4 CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG
23FTW CATCCGGATTATCCAGATATTTATGGAGCTATTGATCAAAATGGCACTTATCAAAATGTG

14CSR AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
670 AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
6BF AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
6BSP AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
19AH AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
23FPO AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
19FTW AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
9VSP AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
TIGR4 AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA
23FTW AGAACAGGTGAAGATGGTAAGTTGACCTTTAAAAATCTGTGATGGGAAATATCGATTA

14CSR TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
670 TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
6BF TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
6BSP TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
19AH TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
23FPO TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
19FTW TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
9VSP TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
TIGR4 TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC
23FTW TTTGAAAATTCTGAACAGCTGGTTATAAACCCGTTCAAATAAGCCTATCGTTGCCTTC

14CSR CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
670 CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
6BF CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
6BSP CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
19AH CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
23FPO CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
19FTW CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
9VSP CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
TIGR4 CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG
23FTW CAAATAGTAAATGGAGAAGTCAGAGATGTGACTTCAATCGTTCCACAAGATATACCAGCG

Figure 196P

PCT/US05/27239/409/487

14CSR GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
670 GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
6BF GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
6BSP GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
19AH GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
23FPO GGTACGAGTTTACGAATGATAAGCACTATATCACAAATGAGCCAATTCTCCAAAAAGA
19FTW GGTACGAGTTTACGAATGATAAGCACTATATTACCAATGAACCTATTCTCCAAAGAGA
9VSP GGTACGAGTTTACGAATGATAAGCACTATATTACCAATGAACCTATTCTCCAAAGAGA
TIGR4 GGTACGAGTTTACGAATGATAAGCACTATATTACCAATGAACCTATTCTCCAAAGAGA
23FTW GGTACGAGTTTACGAATGATAAGCACTATATTACCAATGAACCTATTCTCCAAAGAGA
***** ** ***** ** ***** **

14CSR GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
670 GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
6BF GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
6BSP GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
19AH GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
23FPO GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
19FTW GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
9VSP GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
TIGR4 GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
23FTW GAATATCCTCGAAGTGGTGGTATCGGAATGTTGCCATTCTATCTGATAGGTTGCATGATG
***** *****

14CSR ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
670 ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
6BF ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
6BSP ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
19AH ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
23FPO ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAGCAATGAGAAATGAT
19FTW ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAG-----AAATGAT
9VSP ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAG-----AAATGAT
TIGR4 ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAG-----AAATGAT
23FTW ATGGGAGGAGTTCTATTATACACACGGAACATCCGTAAAGTGTAG-----AAATGAT
***** *****

14CSR AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
670 AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
6BF AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
6BSP AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
19AH AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
23FPO AATATCGATACTCTGAGCGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
19FTW AATATCTATGTTCTGAACAATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
9VSP AATATCTATGTTCTGAACGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
TIGR4 AATATCTATGTTCTGAACGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
23FTW AATATCTATGTTCTGAACGATACTTTTAAGAAGTAGCACTCAAGAAGAGATTTAAGTTTA
***** ** ***** * *****

14CSR CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
670 CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
6BF CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
6BSP CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
19AH CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
23FPO CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
19FTW CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
9VSP CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
TIGR4 CTTGGTGAAAACAGTTTCTTCGCCAAGTAAACCACCATTGAAAGGGGAGATGTTTTCGA
23FTW CTTGGTGAAAACCTGTTTTATTTCGT-AAGTAAACTATCATTGAAAGGGGAGATGTTTTCGA
***** * ***** * *****

Figure 196Q

14CSR AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
670 AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
6BF AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
6BSP AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
19AH AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
23FPO AAACCTGCACAGAAAAAAGGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
19FTW AAACCTGCACAGAAAAA--GGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
9VSP AAACCTGCACAGAAAAA--GGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
TIGR4 AAACCTGCACAGAAAAA--GGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT
23FTW AAACCTGCACAGAAAAA--GGATTATTATTGTCATGTGTAATTCATTACATTGCTCACAGT

14CSR TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
670 TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
6BF TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
6BSP TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
19AH TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
23FPO TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
19FTW TGATTTTAAGAGATA--AATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
9VSP TGATTTTAAGAGATA--AATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
TIGR4 TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT
23FTW TGATTTTAAGAGATATGAATAAGGAGAAATCATGAAATCAATCAACAAATTTTAAACAAT

14CSR GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
670 GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
6BF GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
6BSP GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
19AH GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
23FPO GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
19FTW GCTTGCTGCCTTATTATTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
9VSP GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
TIGR4 GCTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTTTGCTGCAACAGTTTTTGC GGC
23FTW ACTTGCTGCCTTATTACTGACAGCGAGTAGCCTGTTCTGCTGCAACAGTTTTTGC GGC

14CSR GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
670 GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
6BF GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
6BSP GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
19AH GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
23FPO GGACAATGTTAGTACAGCACCAGATGCTGTTACTAAAACCTTAAACAATCCATAAGTTACT
19FTW TGG-GACGACA--ACAACATCTGTTACCGTTCATAAACTATTGGCAACAGATGGGGATAT
9VSP TGG-GACGACA--ACAACATCTGTTACCGTTCATAAACTATTGGCAACAGATGGGGATAT
TIGR4 TGG-GACGACA--ACAACATCTGTTACCGTTCATAAACTATTGGCAACAGATGGGGATAT
23FTW GGA-ACAAAA--ACTAAGCACTTACAGTTCATAAATATTGATGACAGATCAAGAGCT
* * * * *

14CSR GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
670 GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
6BF GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
6BSP GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
19AH GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
23FPO GCTCTCA---GAAGATGATTTAAAGACTTGGGATACAAACGGTCCTAA--AGGATATGATG
19FTW GGATAAAATTGCAATGAGTTAGAAACAGGTAACCTATGCTGGTAATAA--AGTGGGTGTTT
9VSP GGATAAAATTGCAATGAGTTAGAAACAGGTAACCTATGCTGGTAATAA--AGTGGGTGTTT
TIGR4 GGATAAAATTGCAATGAGTTAGAAACAGGTAACCTATGCTGGTAATAA--AGTGGGTGTTT
23FTW TGAC-----GCTTGAATTCTGATGCGATTACTACTGCAGGTTATGACGGTTCGCAAAA
* * * * *

Figure 196R

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14CSR      GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
670        GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
6BF        GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
6BSP       GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
19AH       GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
23FPO      GAACTCAATCTAGTTTAAAAGATTTAACTGGAGTTGTAGCTG----AGGAAATTCCAAAT
19FTW      TACCTGCA---AATGCAAAAGAAATTGCCGGTGTATGTTTCGTTTGGACAAATACTAATA
9VSP       TACCTGCA---AATGCAAAAGAAATTGCCGGTGTATGTTTCGTTTGGACAAATACTAATA
TIGR4      TACCTGCA---AATGCAAAAGAAATTGCCGGTGTATGTTTCGTTTGGACAAATACTAATA
23FTW      T-TTGAA---CAGTTCAAACAACCTCAAGGTGTTCCACAAG---GAGTAACCGAAATCT
          *   *               *** *   *   *   *   *   *   *   *   *

14CSR      GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
670        GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
6BF        GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
6BSP       GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
19AH       GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
23FPO      GTATACTT-----TGAATTACAAAAGTATA-ATTTGACTGATGGT--AAGGAAAAAGA
19FTW      ATGAAATTATTGATGAAAATGGCCAACTCTAGGAGTGAATATTGATCCACAAACATTTA
9VSP       ATGAAATTATTGATGAAAATGGCCAACTCTAGGAGTGAATATTGATCCACAAACATTTA
TIGR4      ATGAAATTATTGATGAAAATGGCCAACTCTAGGAGTGAATATTGATCCACAAACATTTA
23FTW      CTGGTGTTCG--ATTTCGAGTTACAGAGTTATACGGGTCTCAAGGA--AAAGAAACAAGAA
          *   **           *   *   *   *   *   *   *   *   *   *   *

14CSR      AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
670        AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
6BF        AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
6BSP       AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
19AH       AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
23FPO      AAATCTTAAAGATGATAGTAAATGGACAACAGTTCATGGTGGTTTGACAACATAAGATGG
19FTW      AACTCTCAGGGGCAATGCCGGC--AACTGCAATGAAAAAATTAAACAGAAGCTGAA---GG
9VSP       AACTCTCAGGGGCAATGCCGGC--AACTGCAATGAAAAAATTAAACAGAAGCTGAA---GG
TIGR4      AACTCTCAGGGGCAATGCCGGC--AACTGCAATGAAAAAATTAAACAGAAGCTGAA---GG
23FTW      AA-TTTAACGAATGATGATCGGTTTGAGACTGCGGTTAATAAAGGTGTGACGACTGAAACGAGG
          ** *   *   *   *   *   *   *   *   *   *   *   *   *

14CSR      ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
670        ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
6BF        ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
6BSP       ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
19AH       ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
23FPO      ACTTAAAAATTGAAACCAGTACTCTTAAAGGTGT---GTATCGTATTCGTGAGGATAGAAC
19FTW      AGCTAAATTTAACACGGCAAATTTACCAGCTGCTAAGTATAAAATTTATGAAATTCACAG
9VSP       AGCTAAATTTAACACGGCAAATTTACCAGCTGCTAAGTATAAAATTTATGAAATTCACAG
TIGR4      AGCTAAATTTAACACGGCAAATTTACCAGCTGCTAAGTATAAAATTTATGAAATTCACAG
23FTW      TGTAAATTTGATACTGAAGTTTACAAGGGAC---ATATCGTCTGTGCAAGTACGTAA
          ***** *   *   *   *   *   *   *   *   *   *   *

14CSR      AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
670        AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
6BF        AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
6BSP       AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
19AH       AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
23FPO      AAAGACTACCTATGTTGGTCCCTAATGGGCAAGTATTAACAGGTTCAAAGCCGTACCTGC
19FTW      TTTATCAACTTATGTCGGTGAAGATGGAGCAACCTTAACAGGTTCTAAAGCAGTTCCAAT
9VSP       TTTATCAACTTATGTCGGTGAAGATGGAGCAACCTTAACAGGTTCTAAAGCAGTTCCAAT
TIGR4      TTTATCAACTTATGTCGGTGAAGATGGAGCAACCTTAACAGGTTCTAAAGCAGTTCCAAT
23FTW      AGAATCGACTTATGTCGGTCCAAATGGTAAAGTTTTAACAGGTATGAAAGCTGTTCTCTGC
          *   **   *****   *   *   *   *   *   *   *   *   *

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Figure 196S

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14CSR      TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
670        TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
6BF        TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
6BSP       TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
19AH       TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
23FPO      TCTTGTAACCTCTTCCACTTGTTAAACAATAATGGTACAGTAATTGATGCACATGTTTTCCC
19FTW      TGAAATTGAATTACCATT-----GAACGATGTTGTGGA---TGCGCATGTGTATCC
9VSP       TGAAATTGAATTACCATT-----GAACGATGTTGTGGA---TGCGCATGTGTATCC
TIGR4      TGAAATTGAATTACCATT-----GAACGATGTTGTGGA---TGCGCATGTGTATCC
23FTW      TTTAATTACTCTGCCGCTTGTAACCAAAATGGTGTGTAGAAAATGCACATGTCTATCC
          *      *      *      *      *      *      *      *      *      *
14CSR      TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
670        TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
6BF        TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
6BSP       TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
19AH       TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
23FPO      TAAAAATTCATATAATAAACCAGTTGTAGATAAAAGAATTGCTGATACTTTGAATTATAA
19FTW      AAAAAATACAGAAGCAAAGCCAAAAATTGATAAAGATTTCAAAGGTAAAGCAAATCCAGA
9VSP       AAAAAATACAGAAGCAAAGCCAAAAATTGATAAAGATTTCAAAGGTAAAGCAAATCCAGA
TIGR4      AAAAAATACAGAAGCAAAGCCAAAAATTGATAAAGATTTCAAAGGTAAAGCAAATCCAGA
23FTW      AAGAATTCTGAAGACAACCTACAGCAACGAAAACATTTGATACTGCAGCAGGTTTCGT
          ** *** *      *      *      *      *      *      *      *
14CSR      CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
670        CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
6BF        CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
6BSP       CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
19AH       CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
23FPO      CGATCAA-----AATGGTCTGTCTATCGGTACTAAAATCCCATATGTTGT----TA
19FTW      TACACCACGTGTAGATAAAGATACACCTGTGAACCACCAAGTTGGAGATGTTGTAGAGTA
9VSP       TACACCACGTGTAGATAAAGATACACCTGTGAACCACCAAGTTGGAGATGTTGTAGAGTA
TIGR4      TACACCACGTGTAGATAAAGATACACCTGTGAACCACCAAGTTGGAGATGTTGTAGAGTA
23FTW      AGATCCAGGTG---AAAAAGGTTTAGCAATTGGCACTAAGGTACCGTATATTGT----TA
          *      *      *      *      *      *      *      *      *      *
14CSR      ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
670        ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
6BF        ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
6BSP       ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
19AH       ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
23FPO      ATACAACAATTCCAAGTAATGCAACATT-----TGCAACTTCATTTTGGTCAGATG
19FTW      CGA-AATTGTTACAAAAATCCAGCACTTGCTAATTATGCAACAGCAAACCTGGAGCGATA
9VSP       CGA-AATTGTTACAAAAATCCAGCACTTGCTAATTATGCAACAGCAAACCTGGAGCGATA
TIGR4      CGA-AATTGTTACAAAAATCCAGCACTTGCTAATTATGCAACAGCAAACCTGGAGCGATA
23FTW      CAACAACATATCCGAAAAACTCAACTCT-----TGCAACAGCTTTCTGGTCAGATG
          *      *      *      *      *      *      *      *      *      *
14CSR      AAATGACAGAAGGTCTAACTTATAATGAAGA-GTAACAA---TTACTTTGAATAATGTAG
670        AAATGACAGAAGGTCTAACTTATAATGAAGATGTAACAA---TTACTTTGAATAATGTAG
6BF        AAATGACAGAAGGTCTAACTTATAATGAAGATGTAACAA---TTACTTTGAATAATGTAG
6BSP       AAATGACAGAAGGTCTAACTTATAATGAAGATGTAACAA---TTACTTTGAATAATGTAG
19AH       AAATGACAGAAGGTCTAACTTATAATGAAGATGTAACAA---TTACTTTGAATAATGTAG
23FPO      AAATGACAGAAGGTCTAACTTATAATGAAGATGTAACAA---TTACTTTGAATAATGTAG
19FTW      GAATGACTGAAGGTTTGGCATTCAACAAAGGTACAGTGAAAGTAACTGTTGATGATGTTG
9VSP       GAATGACTGAAGGTTTGGCATTCAACAAAGGTACAGTGAAAGTAACTGTTGATGATGTTG
TIGR4      GAATGACTGAAGGTTTGGCATTCAACAAAGGTACAGTGAAAGTAACTGTTGATGATGTTG
23FTW      AAATGACAGAAGGTCTAGATTATAATGGTGATGATGTT---GTTAATTATAATGGTCAAC
          ***** ***** *      *      *      *      *      *      *

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Figure 196T

* ** * * *** * ** ** ***** * ** **

414/487

14CSR CTCCAATCAATC-TGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
670 CTCCAATCAATCCTGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
6BF CTCCAATCAATCCTGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
6BSP CTCCAATCAATCCTGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
19AH CTCCAATCAATCCTGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
23FPO CTCCAATCAATCCTGAAGAACCACGTTGTA AAAACATACGGTAAAAAGTTTGTCAAAGTAG
19FTW AACCACCTTGATCCAACAGAGCCAAAAGTTGTTACATATGGTAAAAAGTTTGTCAAAGTTA
9VSP AACCACCTTGATCCAACAGAGCCAAAAGTTGTTACATATGGTAAAAAGTTTGTCAAAGTTA
TIGR4 AACCACCTTGATCCAACAGAGCCAAAAGTTGTTACATATGGTAAAAAGTTTGTCAAAGTTA
23FTW AACCACATAATCCTGAAGAGCCACGTTGTA AAAACATATGGTAAAAAGTTTGTCAAAGTTG
*** * *** **

Figure 196V

Figure 196W

PCT/US2005/027239 416/487

14CSR TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
670 TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
6BF TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
6BSP TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
19AH TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
23FPO TCTTACTTCTAATACGGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGTACTTATAA
19FTW ATTAGTTTCTGATGCACAAGGTCGCTTTGAAATTACAGGCCCTTCTTGCAAGGTACATATTA
9VSP ATTAGTTTCTGATGCACAAGGTCGCTTTGAAATTACAGGCCCTTCTTGCAAGGTACATATTA
TIGR4 ATTAGTTTCTGATGCACAAGGTCGCTTTGAAATTACAGGCCCTTCTTGCAAGGTACATATTA
23FTW TCTTACTTCTAACACTGATGGTCAATTCCAAATTTTCAGGTCTTGCTGCTGGAAGCTACAC
* * * * *

14CSR ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
670 ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
6BF ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
6BSP ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
19AH ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
23FPO ATTAGAAGAAATTAAAGCTCCAGAAGGTTTTGCGAAAAT---TGATGATGTAGAATTTGT
19FTW CTTAGAAGAAACAAAACAGCCTGCTGGTTATGCATTACTAAGCCGTCAGAAATTTGA
9VSP CTTAGAAGAAACAAAACAGCCTGCTGGTTATGCATTACTAAGCCGTCAGAAATTTGA
TIGR4 CTTAGAAGAAACAAAACAGCCTGCTGGTTATGCATTACTAAGCCGTCAGAAATTTGA
23FTW GTTGAAGAAACAAAAGCTCCAGAAGGTTTTGCGAAAAT---TGGAGATGTGAAGTTTGA
* * * * *

14CSR TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
670 TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
6BF TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
6BSP TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
19AH TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
23FPO TGTTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
19FTW AGTCACTGCAACTTCTTATTCAGCGACTGGACAAGGCATTGAGTATACTGCTGGTTCAGG
9VSP AGTCACTGCAACTTCTTATTCAGCGACTGGACAAGGCATTGAGTATACTGCTGGTTCAGG
TIGR4 AGTCACTGCAACTTCTTATTCAGCGACTGGACAAGGCATTGAGTATACTGCTGGTTCAGG
23FTW GGTGGAGCAGGTTCTTG-----GAATCAAGGTGAGTTTAATTACTTAAAAGATGTTCA
* * * * *

14CSR AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
670 AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
6BF AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
6BSP AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
19AH AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
23FPO AAAGAATGACGCTACAAAAGTAGTCAACAAAAAATCAGATCCCACAAACGGGTGGTAT
19FTW TAAAGATGACGCTACAAAAGTAGTCAACAAAAAATCAGATCCCACAAACGGGTGGTAT
9VSP TAAAGATGACGCTACAAAAGTAGTCAACAAAAAATCAGATCCCACAAACGGGTGGTAT
TIGR4 TAAAGATGACGCTACAAAAGTAGTCAACAAAAAATCACTATCCCACAAACGGGTGGTAT
23FTW GAAGAACGACGCTACAAAAGTAGTCAACAAAAAATCAGATCCCTCAAACGGGTGGTAT
* * * * *

14CSR TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
670 TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
6BF TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
6BSP TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
19AH TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
23FPO TGGTACAATTATCTTTGCTGTAGCAGGGGGCTGTGATTATGGGTATTGCAGTGTACGCATA
19FTW TGGTACAATTATCTTTGCTGTAGCAGGGGGCTGTGATTATGGGTATTGCAGTGTACGCATA
9VSP TGGTACAATTATCTTTGCTGTAGCAGGGGGCTGTGATTATGGGTATTGCAGTGTACGCATA
TIGR4 TGGTACAATTATCTTTGCTGTAGCGGGGGCTGCGATTATGGGTATTGCAGTGTACGCATA
23FTW TGGTACAATTATCTTTGCTGTAGCGGGGGCTGTGATTATGGGTATTGCAGTGTACGCATA

Figure 196X

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14CSR      TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
670        TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
6BF        TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
6BSP       TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
19AH       TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
23FPO      TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
19FTW      TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
9VSP       TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
TIGR4      TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
23FTW      TGTTAAAAACAACAAAGATGAGGATCAACTTGCTTAAGTAAGAGAGAAAAGGAGCCATTGA
*****

14CSR      TGACAATGCAGAAAATGCAGAAAATG-----
670        TGACAATGCAGAAAATGCAGAAAATG-----
6BF        TGACAATGCAGAAAATGCAGAAAATG-----
6BSP       TGACAATGCAGAAAATGCAGAAAATG-----
19AH       TGACAATGCAGAAAATGCAGAAAATG-----
23FPO      TGACAATGCAGAAAATGCAGAAAATG-----
19FTW      TGACAATGCAGAAAATGCAGAAAATG-----
9VSP       TGACAATGCAGAAAATGCAGAAAATGCAGAAAATGCAGAAAATGCAGAAAATGCAGAAAA
TIGR4      TGACAATGCAGAAAATGCAGAAAATG-----
23FTW      TGACAATGCAGAAAATGCAGAAAATG-----
*****

14CSR      --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
670        --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
6BF        --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
6BSP       --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
19AH       --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
23FPO      --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
19FTW      --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
9VSP       TGATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
TIGR4      --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
23FTW      --ATTAGTCGTATCTTCTTTGTTATGGCTCTGTGTTTTCTCTTGATGGGGTGCACATG
*****

14CSR      CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
670        CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
6BF        CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
6BSP       CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
19AH       CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
23FPO      CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
19FTW      CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
9VSP       CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
TIGR4      CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
23FTW      CAGTCCAAGCGCAAGAAGATCACACGTTGGTCTTGCAATTGGAGAACTATCAGGAGGTGG
*****

14CSR      TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
670        TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
6BF        TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
6BSP       TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
19AH       TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
23FPO      TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
19FTW      TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
9VSP       TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
TIGR4      TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
23FTW      TTAGTCAATTGCCATCTCGTGATGGTCATCGGTTGCAAGTATGGAAGTTGGATGATTCGT
*****
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Figure 196Y

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14CSR      ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
670        ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
6BF        ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
6BSP       ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
19AH       ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
23FPO      ATTCCTATGATAATCGGGTGCAAATTGTGAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
19FTW      ATTCCTATGATAATCGGGTGCAAATTGTGAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
9VSP       ATTCCTATGATAATCGGGTGCAAATTGTGAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
TIGR4      ATTCCTATGATGATCGGGTGCAAATTGTAAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
23FTW      ATTCCTATGATAATCGGGTGCAAATTGTGAGAGACTTGCATTCTGTTGGGATGAGAATAAAC
*****

14CSR      TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
670        TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
6BF        TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
6BSP       TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
19AH       TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
23FPO      TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
19FTW      TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
9VSP       TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
TIGR4      TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
23FTW      TTTCTTCTTTCAAAAAGACTTCGTTTGAGATGACCTTCCTTGAGAATCAGATTGAAGTAT
*****

14CSR      CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
670        CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
6BF        CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
6BSP       CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
19AH       CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
23FPO      CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
19FTW      CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
9VSP       CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
TIGR4      CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
23FTW      CTCATATTCCAAATGGTCTTTACTATGTTGCTCTATTATCCAGACGGATGCGGTTTCTT
*****

14CSR      ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
670        ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
6BF        ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
6BSP       ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
19AH       ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
23FPO      ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
19FTW      ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
9VSP       ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
TIGR4      ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
23FTW      ATCCAGCTGAATTTCTTTTTGAAATGACAGATCAAACGGTAGAGCCTTTGGTCATTGTAG
*****

14CSR      CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
670        CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
6BF        CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
6BSP       CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
19AH       CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
23FPO      CGAAAAAACAGATACGGTGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
19FTW      CGAAAAAACAGATACGGTGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
9VSP       CGAAAAAACAGATACGGTGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
TIGR4      CGAAAAAACAGATACAATGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
23FTW      CGAAAAAACAGATACGGTGACAACAAAGGTGAAGCTGATAAAGGTGGATCAAGACCACA
*****

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Figure 196X

14CSR ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
670 ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
6BF ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
6BSP ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
19AH ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
23FPO ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
19FTW ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
9VSP ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
TIGR4 ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG
23FTW ATCGCTTGGAGGGTGTCCGCTTTAAATTGGTATCAGTAGCAAGAGATGGTTCTGAAAAAG

14CSR AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
670 AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
6BF AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
6BSP AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
19AH AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
23FPO AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
19FTW AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
9VSP AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
TIGR4 AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT
23FTW AGGTTCCCTTGATTGGAGAATACCGTTACAGTTCCTTCTGGTCAAGTAGGGAGAACTCTCT

14CSR ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
670 ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
6BF ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
6BSP ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
19AH ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
23FPO ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
19FTW ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
9VSP ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
TIGR4 ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA
23FTW ATACTGATAAAAAATGGAGAGATTTTGTGACAAATCTTCCTCTTGGGAACTATCGTTTCA

14CSR AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGCTGG
670 AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGCTGG
6BF AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGCTGG
6BSP AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGCTGG
19AH AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGCTGG
23FPO AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGTTGG
19FTW AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGTTGG
9VSP AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGTTGG
TIGR4 AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGTTGG
23FTW AGGAGGTGGAGCCACTGGCAGGCTATGCTGTTACGACGCTGGATACGGATGTCCAGTTGG

14CSR TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
670 TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
6BF TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
6BSP TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
19AH TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
23FPO TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
19FTW TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
9VSP TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
TIGR4 TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG
23FTW TAGATCATCAGCTGGTGACGATTACGGTTGTCAATCAGAAATTACCACGTGGCAATGTTG

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14CSR ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
670 ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
6BF ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
6BSP ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
19AH ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
23FPO ACTTTATGAAGGTGGATGGTAGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
19FTW ACTTTATGAAGGTGGATGGTAGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
9VSP ACTTTATGAAGGTGGATGGTAGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
TIGR4 ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA
23FTW ACTTTATGAAGGTGGATGGTCGGACCAATACCTCTCTTCAAGGGGCAATGTTCAAAGTCA

14CSR TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
670 TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
6BF TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
6BSP TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
19AH TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
23FPO TGAAAGAAGAAACGGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTGG
19FTW TGAAAGAAGAAACGGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTGG
9VSP TGAAAGAAGAAACGGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTGG
TIGR4 TGAAAGAAGAAAGCGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTAA
23FTW TGAAAGAAGAAACGGGACACTATACTCCTGTTCTTCAAAATGGTAAGGAAGTAGTTGTGG

14CSR CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
670 CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
6BF CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
6BSP CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
19AH CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
23FPO CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
19FTW CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
9VSP CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
TIGR4 CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT
23FTW CATCAGGGAAAGATGGTCGTTTCCGAGTGGAAGGTCTAGAGTATGGGACATACTATTTAT

14CSR GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
670 GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
6BF GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
6BSP GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
19AH GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
23FPO GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
19FTW GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
9VSP GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
TIGR4 GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG
23FTW GGGAGCTCCAAGCTCCAAGTGGTTATGTTCAATTAACATCGCCTGTTTCCTTTACAATCG

14CSR GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
670 GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
6BF GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
6BSP GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
19AH GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
23FPO GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
19FTW GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
9VSP GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
TIGR4 GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG
23FTW GGAAAGATACTCGTAAGGAACTGGTAACAGTGGTTAAAAATAACAAGCGACCACGGATTG

Figure 196AB

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14CSR ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
670 ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
6BF ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
6BSP ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
19AH ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
23FPO ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
19FTW ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
9VSP ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
TIGR4 ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT
23FTW ATGTGCCAGATACAGGGGAAGAAACCTTGTATATCTTGATGCTTGTGCCATTTTGTGTGT

14CSR TTGGTAGTGGTTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
670 TTGGTAGTGGTTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
6BF TTGGTAGTGGTTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
6BSP TTGGTAGTGGTTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
19AH TTGGTAGTGGTTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
23FPO TTGGTAGTGGCTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
19FTW TTGGTAGTGGCTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
9VSP TTGGTAGTGGCTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
TIGR4 TTGGTAGTGGCTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA
23FTW TTGGTAGTGGCTATTATCTTACGAAAAAACCAATAACTGATATTCAATGTACATCATTA

14CSR TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
670 TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
6BF TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
6BSP TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
19AH TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
23FPO TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
19FTW TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
9VSP TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
TIGR4 TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA
23FTW TGAAAAAGATAGCAGGCTGAAGGGAAGACCAGAGTACTCTGAGGTGATGTTAATCAGGAA

14CSR TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
670 TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
6BF TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
6BSP TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
19AH TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
23FPO TCATGGTGATTGTGGCATGAATCATAAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
19FTW TCATGGTGATTGTGGCATGAATCATAAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
9VSP TCATGGTGATTGTGGCATGAATCATAAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
TIGR4 TCATGGTGATGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC
23FTW TCATGGTGATTGTGGCATGAATCACAATAACGGATATGAGGCTGGGCAGATTGTGCCAGCC

14CSR TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
670 TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
6BF TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
6BSP TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
19AH TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
23FPO TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
19FTW TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
9VSP TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
TIGR4 TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG
23FTW TCATTGTGGGTTATTGTTTGTAAAACGATAGGACTGGTCTGGTAATCATTTTAGGAATGG

Figure 196AC

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14CSR ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
670 ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
6BF ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
6BSP ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
19AH ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
23FPO ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
19FTW ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
9VSP ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
TIGR4 ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG
23FTW ACAGGACTGGGATTCTGATTATAAATGGATGGTGAATCAGAAAGAAATGAGATTTCTCG

14CSR TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
670 TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
6BF TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
6BSP TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
19AH TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
23FPO TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
19FTW TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
9VSP TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
TIGR4 TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT
23FTW TTTCTCTTAGCAGATAGGATTGTCTGTTAGGAAAAGCGATAAAATGATGAGTTGAAGAT

14CSR AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
670 AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
6BF AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
6BSP AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
19AH AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
23FPO AAAGGAATGCTGATAAAAAATGGCAAAACAAAAAGCAAAACGAAACAATCTCCTATT
19FTW AAAGGAATGCTGATAAAAAATGGCAAAACAAAAAGCAAAACGAAACAATCTCCTATT
9VSP AAAGGAATGCTGATAAAAAATGGCAAAACAAAAAGCAAAACGAAACAATCTCCTATT
TIGR4 AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT
23FTW AAAGGGATGCTGATAAAAA-TGGTAAAAACAAAAAGCAAAACGAAATAATCTCCTATT

14CSR AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
670 AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
6BF AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
6BSP AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
19AH AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
23FPO AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
19FTW AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
9VSP AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
TIGR4 AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA
23FTW AGGAGTGGTATTTTTCATTGGAATGGCGGTAATGGCGTATCCGCTGGTGTCTCGCTTGTA

14CSR TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
670 TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
6BF TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
6BSP TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
19AH TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
23FPO TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
19FTW TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
9VSP TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
TIGR4 TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA
23FTW TTATCGAGTGAATCAAATCAACAAATTGCTGACTTTGATAAGGAAAAAGCAACGTTGGA

Figure 196AD

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14CSR TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
670 TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
6BF TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
6BSP TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
19AH TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
23FPO TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
19FTW TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
9VSP TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
TIGR4 TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA
23FTW TGAGGCTGACATTGATGAACGAATGAAATTGGCACAAAGCCTTCAATGACTCTTTGAATAA

14CSR TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
670 TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
6BF TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
6BSP TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
19AH TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
23FPO TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
19FTW TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
9VSP TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
TIGR4 TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC
23FTW TGTAGTGAGTGGCGATCCTTGGTCGGAAGAAATGAAGAAAAAGGGCGAGCAGAGTATGC

14CSR ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
670 ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
6BF ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
6BSP ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
19AH ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
23FPO ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
19FTW ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
9VSP ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
TIGR4 ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
23FTW ACGTATGTTAGAAATCCATGAGCGGATGGGGCATGTGGAAATCCCCGTTATTGACGTGGA
*** ***** *

14CSR TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
670 TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
6BF TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
6BSP TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
19AH TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
23FPO TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
19FTW TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
9VSP TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
TIGR4 TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA
23FTW TTTGCCGGTTTATGCTGGTACTGCTGAAGAGGTATTGCAGCAAGGGGCTGGGCATCTAGA

14CSR GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
670 GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
6BF GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
6BSP GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
19AH GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
23FPO GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
19FTW GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
9VSP GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
TIGR4 GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG
23FTW GGGAACTTCTCTGCCGATCGGAGGCAATTCGACCCATGCGGTGATTACGGCACATACAGG

Figure 196AE

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14CSR TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
670 TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
6BF TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
6BSP TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
19AH TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
23FPO TTTGCCAACGGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
19FTW TTTGCCAACGGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
9VSP TTTGCCAACGGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
TIGR4 TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA
23FTW TTTGCCAACAGCTAAGATGTTTACGGATTGACCAAACCTTAAAGTTGGGGATAAGTTTTA

14CSR TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
670 TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
6BF TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
6BSP TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
19AH TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
23FPO TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
19FTW TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
9VSP TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
TIGR4 TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC
23FTW TGTGCACAATATCAAGGAAGTGATGGCCTATCAAGTGGATCAAGTAAAGGTGATTGAGCC

14CSR GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
670 GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
6BF GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
6BSP GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
19AH GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
23FPO GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
19FTW GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
9VSP GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
TIGR4 GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG
23FTW GACGAACTTTGATGATTTATTGATTGTACCAGGTCATGATTATGTGACCTTGCTGACTTG

14CSR TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
670 TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
6BF TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
6BSP TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
19AH TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
23FPO TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
19FTW TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
9VSP TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
TIGR4 TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT
23FTW TACGCCATACATGATCAATACCCATCGTCTATTGGTTCGGGGGCATCGGATACCGTACGT

14CSR AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
670 AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
6BF AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
6BSP AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
19AH AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
23FPO AGCAGAGGTTGAGGAAGAATTTATTGCGGCAAACAACTCAGTCATCTCTATCGCTACCT
19FTW AGCAGAGGTTGAGGAAGAATTTATTGCGGCAAACAACTCAGTCATCTCTATCGCTACCT
9VSP AGCAGAGGTTGAGGAAGAATTTATTGCGGCAAACAACTCAGTCATCTCTATCGCTACCT
TIGR4 AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT
23FTW AGCAGAGGTTGAGGAAGAATTTATTGCAGCAAACAACTCAGTCATCTCTATCGCTACCT

Figure 196AF

14CSR GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
670 GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
6BF GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
6BSP GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
19AH GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
23FPO GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
19FTW GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
9VSP GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
TIGR4 GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA
23FTW GTTTTATGTGGCAGTTGGTTTGATTGTGATTCTTTTATGGATTATTTCGACGCTTGCGCAA

14CSR GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
670 GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
6BF GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
6BSP GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
19AH GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
23FPO GAAGAAACGGCAATCAGAAAGAGCTTTGAAAGCATTGAAGGAAGCTACTAAGGAAGTGAA
19FTW GAAGAAACGGCAATCAGAAAGAGCTTTGAAAGCATTGAAGGAAGCTACTAAGGAAGTGAA
9VSP GAAGAAACGGCAATCAGAAAGAGCTTTGAAAGCATTGAAGGAAGCTACTAAGGAAGTGAA
TIGR4 GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
23FTW GAAGAAAAACAACCGGAAAAGGCTTTGAAGGCGCTGAAAGCAGCAAGGAAGGAAGTGAA
***** * * * * *

14CSR GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
670 GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
6BF GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
6BSP GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
19AH GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
23FPO GGTAGAGGATGAGTAAGAGTAGATATTACGGAAAAAGAGCGTGAAAAAGAAGAAAAATC
19FTW GGTAGAGGATGAGTAAGAGTAGATATTACGGAAAAAGAGCGTGAAAAAGAAGAAAAATC
9VSP GGTAGAGGATGAGTAAGAGTAGATATTACGGAAAAAGAGCGTGAAAAAGAAGAAAAATC
TIGR4 GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
23FTW GGTGGAGGATGGACAACAGTAGACGTTACGAAAAAAGGCACAAAAAAGAAGAAACATC
*** * * * * *

14CSR CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
670 CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
6BF CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
6BSP CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
19AH CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
23FPO CGTTCATTCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
19FTW CGTTCATTCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
9VSP CGTTCATTCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
TIGR4 CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
23FTW CGCTGATCCTTCTTCTGATTTTCTTAGTAGGATTGCGCGTTGCGATATATCCATTGGTGT
* * * * *

14CSR CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
670 CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
6BF CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
6BSP CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
19AH CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
23FPO CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
19FTW CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
9VSP CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
TIGR4 CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT
23FTW CTCGTTATTATTATCGTATTGAGTCAAACGAGGTTATTAAAGAGTTTGATGAGACGGTTT

14CSR CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
670 CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
6BF CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
6BSP CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
19AH CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
23FPO CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
19FTW CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
9VSP CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
TIGR4 CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA
23FTW CCCAGATGGATAAGGCAGAACTTGAGGAGCGTTGGCGCTTGGCTCAAGCCTTCAATGCGA

14CSR CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
670 CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
6BF CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
6BSP CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
19AH CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
23FPO CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
19FTW CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGATCAGGAAAAAGAACAGGGAGTTT
9VSP CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
TIGR4 CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT
23FTW CCTTGAAACCATCTGAAATTCCTTGATCCTTTTACAGAGCAAGAGAAAAAGAAAGGCGTCT

14CSR CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
670 CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
6BF CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
6BSP CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
19AH CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
23FPO CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
19FTW CAGAATATGCTAACATGCTAAAGTTCATGAGCGTATCGGATATGTAGAAATTCCTGCGA
9VSP CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
TIGR4 CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA
23FTW CAGAATATGCCAATATGCTAAAGGTCCATGAGCGGATTGGCTATGTGGAATTCCTGCGA

14CSR TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
670 TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
6BF TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
6BSP TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
19AH TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
23FPO TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
19FTW TTGAACAGGAAATCCCATGTATGTTGGCACAGTGAAGACATTCCTCAGAAAGGGCGCAG
9VSP TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
TIGR4 TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG
23FTW TTGATCAGGAAATTCGATGTATGTCGGAACGAGTGAGGAAATTCCTCAGAAGGGCGCAG

14CSR GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
670 GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
6BF GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
6BSP GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
19AH GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
23FPO GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
19FTW GGCTGTTAGAAGGGGCTTCGCTGCCTGTTGGAGGTGAAAATACCCATACAGTGATCACTG
9VSP GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
TIGR4 GGCTGTTAGAAGGGGCTTCGCTGCCTGTTGGAGGTGAAAATACCCATACAGTGATCACTG
23FTW GATTGCTAGAGGGAGCTTCGTTACCGGTTGGTGGTGAAAATACCCACACAGTTGTCACTG
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14CSR CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
670 CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
6BF CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
6BSP CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
19AH CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
23FPO CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
19FTW CTCACAGAGGATTGCCAACGGCAGAACTGTTTCACTCAATTGGATAAGATGAAGAAAGGGG
9VSP CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
TIGR4 CTCACAGAGGATTGCCAACGGCAGAACTGTTTCACTCAATTGGATAAGATGAAAAAAGGGG
23FTW CTCATAGAGGATTACCGACGGCAGAACTGTTTAGTCAATTGGATAAGATGAAAAAAGGGG
**** *
14CSR ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
670 ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
6BF ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
6BSP ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
19AH ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
23FPO ATATCTTTTATCTTCACGTTTTAGATCAGGTGTTGGCCTACCAAGTGGATCAGATAGTGA
19FTW ATATCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTATCAAGTGGATCAGATAGTGA
9VSP ATATCTTTTATCTTCACGTTTTAGATCAGGTGTTGGCCTACCAAGTGGATCAGATAGTGA
TIGR4 ATATCTTTTATCTTCACGTTTTAGATCAGGTGTTGGCCTACCAAGTGGATCAGATAGTGA
23FTW ATGTCTTTTATCTTCACGTTTTAGACCAGGTGTTGGCCTACCAAGTGGATCAGATTTTGA
** *
14CSR CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
670 CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
6BF CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
6BSP CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
19AH CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
23FPO CGGTGGAGCCGAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
19FTW CGGTGGAGCCGAATGATTTTGAAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
9VSP CGGTGGAGCCGAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
TIGR4 CGGTGGAGCCGAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
23FTW CGGTTGAGCCAAATGACTTTGAGCCTGTCTTGATTCAACATGGGGAAGATTATGCGACCT
**** *
14CSR TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
670 TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
6BF TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
6BSP TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
19AH TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
23FPO TACTGACTTGTACGCCATACATGATTAACAGCCACCGTTTGTGGTACGTGGGAAGCGGA
19FTW TGTTGACTTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
9VSP TGTTGACTTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
TIGR4 TGTTGACTTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
23FTW TGTTGACCTGTACACCGTATATGATTAACAGTCATCGTCTGTTGGTACGTGGGAAGCGGA
* *
14CSR TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
670 TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
6BF TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
6BSP TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
19AH TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
23FPO TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
19FTW TTCCATATACAGCGCCGATTGCTGAGCGGAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
9VSP TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
TIGR4 TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
23FTW TTCCGTATACGGCACCAATTGCAGAGCGAAATCGAGCGGTGAGAGAGCGTGGGCAATTCT
**** *

Figure 196I

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```

14CSR      GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
670        GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
6BF        GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
6BSP       GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
19AH       GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
23FPO      GGTGTGGTTATTACTAGGAGCGATGGCGGTATCCTTCTCTTGTGTATCGCGTGTATC
19FTW      GGTGTGGTTATTACTAGGAGCGATGGCGGTATCCTTCTCTTGTGTATCGCGTGTATC
9VSP       GGTGTGGTTATTACTAGGAGCGATGGCGGTATCCTTCTCTTGTGTATCGCGTGTATC
TIGR4      GGTGTGGTTATTACTAGGAGCGATGGCGGTATCCTTCTCTTGTGTATCGCGTGTATC
23FTW      GGTGTGGTTATTGCTAGCGGCGTTGGTTATGATTCTGGTATTGAGTTACGGGGTGTATC
          *****
14CSR      GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
670        GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
6BF        GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
6BSP       GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
19AH       GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
23FPO      GTAATCGACGGATTGTCAAAGGACTAGAAAAGCAATTGGAGGGGCGTCATGTCAAAGGACT
19FTW      GTAATCGACGGATTGTCAAAGGACTAGAAAAGCAATTGGAGGGGCGTCATGTCAAAGGACT
9VSP       GTAATCGACGGATTGTCAAAGGACTAGAAAAGCAATTGGAGGGGCGTCATGTCAAAGGACT
TIGR4      GTAATCGACGGATTGTCAAAGGACTAGAAAAGCAATTGGAGGGGCGTCATGTCAAAGGACT
23FTW      GTCATCGTCGCATTGTCAAAGGGCTAGAAAAACAATTGGAGGAGCATCATGTCAAAGGCT
          ** * * * *
14CSR      AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
670        AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
6BF        AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
6BSP       AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
19AH       AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
23FPO      AAATACGAGCCTTATTGGGATACTTGTGATGTTGGTAGCCTGTTTGATTCCTATTTAT
19FTW      AAATACGAGCCTTATTGGGATACTTGTGATGTTGGTAGCCTGTTTGATTCCTATTTAT
9VSP       AAATACGAGCCTTATTGGGATACTTGTGATGTTGGTAGCCTGTTTGATTCCTATTTAT
TIGR4      AAATACGAGCCTTATTGGGATACTTGTGATGTTGGTAGCCTGTTTGATTCCTATTTAT
23FTW      AAGCTACAGAAATTACTAGGGTATTTGCTGATGCTGGTAGCATTGGTGATTCCTGTTTAT
          ** * * * *
14CSR      TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
670        TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
6BF        TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
6BSP       TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
19AH       TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
23FPO      TGTTTTGGACAGATGGTGTTGCAGTCTCTTGGACAGGTGAAAGGTCATGCTACATTTGTG
19FTW      TGTTTTGGACAGATGGTGTTGCAGTCTCTTGGACAGGTGAAAGGTCATGCTACATTTGTG
9VSP       TGTTTTGGACAGATGGTGTTGCAGTCTCTTGGACAGGTGAAAGGTCATGCTACATTTGTG
TIGR4      TGTTTTGGACAGATGGTGTTGCAGTCTCTTGGACAGGTGAAAGGTCATGCTACATTTGTG
23FTW      TGTTTTGGGCAGATGGTGTTACAGTCTTTAGGACAAGTAAAAGGTCATGAGATATTTTCA
          *****
14CSR      GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
670        GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
6BF        GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
6BSP       GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
19AH       GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
23FPO      AAATCCATGACAACCTGAAATGTACCAAGAACAACAGAACCATTCTCTCGCCTACAATCAA
19FTW      AAATCCATGACAACCTGAAATGTACCAAGAACAACAGAACCATTCTCTCGCCTACAATCAA
9VSP       AAATCCATGACAACCTGAAATGTACCAAGAACAACAGAACCATTCTCTCGCCTACAATCAA
TIGR4      AAATCCATGACAACCTGAAATGTACCAAGAACAACAGAACCATTCTCTCGCCTACAATCAA
23FTW      GAATCTGTGACGGCCGACAGTTACCAAGAGCAATTGCAACGGTCGCTTGATTACAATCAA
          *****

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Figure 196AJ

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14CSR CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT
670 CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT
6BF CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT
6BSP CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT
19AH CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT
23FPO CGCTTGGCTTCGCAAAATCGCATTGTAGATCCTTTTTTGGCGGAGGGATATGAGGTCAAT
19FTW CGCTTGGCTTCGCAAAATCGCATTGTAGATCCTTTTTTGGCGGAGGGATATGAGGTCAAT
9VSP CGCTTGGCTTCGCAAAATCGCATTGTAGATCCTTTTTTGGCGGAGGGATATGAGGTCAAT
TIGR4 CGCTTGGCTTCGCAAAATCGCATTGTAGATCCTTTTTTGGCGGAGGGATATGAGGTCAAT
23FTW CGCTTGGATTTCGCAAAATCGTATTGTAGATCCTTTTTTGGCGGAAGGGTATGAGGTAAAT

14CSR TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA
670 TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA
6BF TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA
6BSP TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA
19AH TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA
23FPO TACCAAGTGTCTGACGACCTGATGCAGTCTATGGTTACTTGTCTATTCCAAGTTTGGAA
19FTW TACCAAGTGTCTGACGACCTGATGCAGTCTATGGTTACTTGTCTATTCCAAGTTTGGAA
9VSP TACCAAGTGTCTGACGACCTGATGCAGTCTATGGTTACTTGTCTATTCCAAGTTTGGAA
TIGR4 TACCAAGTGTCTGACGACCTGATGCAGTCTATGGTTACTTGTCTATTCCAAGTTTGGAA
23FTW TACCAAGTGTCTGACGATCCTGATGCAGTCTACGGCTATTTGTCGATTCCGAGTTTGGAA

14CSR ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT
670 ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT
6BF ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT
6BSP ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT
19AH ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT
23FPO ATCATGGAGCCGTTTATTTGGGAGCAGATTATCATCATTTAGGGATGGGCTTGGCTCAT
19FTW ATCATGGAGCCGTTTATTTGGGAGCAGATTATCATCATTTAGGGATGGGCTTGGCTCAT
9VSP ATCATGGAGCCGTTTATTTGGGAGCAGATTATCATCATTTAGGGATGGGCTTGGCTCAT
TIGR4 ATCATGGAGCCGTTTATTTGGGAGCAGATTATCATCATTTAGGGATGGGCTTGGCTCAT
23FTW ATCATGGAGCCAGTTTATCTAGGAGCGGATTACCATCATTTAGCAATGGGGTTGGCCCAT

14CSR GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC
670 GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC
6BF GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC
6BSP GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC
19AH GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC
23FPO GTGGATGGTACACCGCTGCCCTCTGGATGGTACAGGGATTTCGCTCAGTGATTGCTGGGCAC
19FTW GTGGATGGTACACCGCTGCCCTCTGGATGGTACAGGGATTTCGCTCAGTGATTGCTGGGCAC
9VSP GTGGATGGTACACCGCTGCCCTCTGGATGGTACAGGGATTTCGCTCAGTGATTGCTGGGCAC
TIGR4 GTGGATGGTACACCGCTGCCCTCTGGATGGTACAGGGATTTCGCTCAGTGATTGCTGGGCAC
23FTW GTGGATGGGACGCCTCTTCTGTTGAGGGAAAAGGGATTTCGTTCACTGATTGCTGGGCAC

14CSR CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
670 CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
6BF CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
6BSP CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
19AH CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
23FPO CGTGCAGAGCCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
19FTW CGTGCAGAGCCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
9VSP CGTGCAGAGCCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
TIGR4 CGTGCAGAGCCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT
23FTW CGTGCAGAACCAAGCCATGTCTTTTTCCGCCATTTGGATCAGCTAAAAGTTGGAGATGCT

Figure 196AK

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14CSR CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
670 CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
6BF CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
6BSP CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
19AH CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
23FPO CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
19FTW CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
9VSP CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
TIGR4 CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT
23FTW CTTTATTATGATAATGGCCAGGAAATTGTAGAATATCAGATGATGGACACAGAGATTATT

14CSR TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
670 TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
6BF TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
6BSP TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
19AH TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
23FPO TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
19FTW TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
9VSP TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
TIGR4 TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA
23FTW TTACCGTCGGAATGGGAAAAATTAGAATCGGTTAGCTCTAAAAATATCATGACCTTGATA

14CSR ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
670 ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
6BF ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
6BSP ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
19AH ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
23FPO ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
19FTW ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
9VSP ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
TIGR4 ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT
23FTW ACCTGCGATCCGATTCCCTACCTTTAATAAACGCTTATTAGTGAATTTTGAACGAGTCGCT

14CSR GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
670 GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
6BF GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
6BSP GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
19AH GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
23FPO GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
19FTW GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
9VSP GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
TIGR4 GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA
23FTW GTTTATCAAAAATCAGATCCACAAACAGCTGCAGTTGCGAGGGTTGCTTTTACGAAAGAA

14CSR GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
670 GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
6BF GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
6BSP GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
19AH GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
23FPO GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
19FTW GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
9VSP GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
TIGR4 GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG
23FTW GGACAATCTGTATCGCGTGTGCAACCTCTCAATGGTTGTACCGTGGGCTAGTGGTACTG

Figure 196AL

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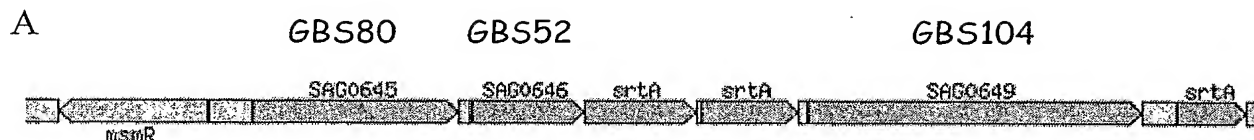
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14CSR      GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
670        GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
6BF        GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
6BSP       GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
19AH       GCATTTATGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
23FPO      GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
19FTW      GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
9VSP       GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
TIGR4      GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
23FTW      GCATTTCTGGGAATCCTGTTTGTGTTTGTGGAAGCTAGCACGTTTACTACGAGGGAAATAA
*****

14CSR      AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAGGGG
670        AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAGTGG
6BF        AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAG---
6BSP       AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAG---
19AH       AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAG---
23FPO      AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGT-----
19FTW      AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAGT--
9VSP       AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAG---
TIGR4      AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAGTGG
23FTW      AAAGAAATGAAAGGAAAGCTAAGGCTGTTCCCTTTTTCCGGCTCTTTGTCAACTGTAGT---
*****
```

Figure 196AM

Figure 197



B

Intergenic region between AraC R and GBS 80

AraC...CAT

TTGATAGACCGCCTTCATTATCATTTCTAGAATTTTTCTTTAGGTTTGTA
 AAGACTACAAAATAAAATGATGAAAACAACTATCTTGTGGATACACTAAA
 AAGACACGCTAATTAGCAAACCTCTCTTCATCATCTCTCACCATTATTA
 TACTAC **TATTTATAT**GACAAATAAAGGTGATTT **TGTTAA**AATATAACTTT
 GAAAATCCACATATATTTTTAATCTTCCGTCTGAAAAATAAATAAAAAT
 AGTAAAAATAAACACGAATTTAAAATAAGCAAATTTTTTAAGAAAATCTG
 TGCTAAACTTTAATAGTTTTGTGCTTAATAATAATCAGCACTTACAAAGA
 ACAAAGGGAAAAGCGAGGAGAGAAGCTTTTA **ATG... GBS80**

C

187	4A		5A		5A
233	6A		6A		7A
Strain	FACS α -80	Strain	FACS α -80	Strain	FACS α -80
1998	95	5364	454	2129	57
2110	0	JMV071	556	2274	113
2603	62	JM91003	587	5401	170
3050	43	CJB111	365	5408	0
5376	165			5518	31
M781	65			CJB110	71
COH1	305 (G→T 179)			J7357B	91
18rs 21	0 (STOP, no LPXTG)			COH31	0

AI-1											
			aa	M1	M3	M5	M18	M49	M6	M12	
M6											
50913503	M6_Spy0157	LPXTG	628	gas15 30%in593aa	M3-0098 46%in256aa M3-0104 28%in563aa		M18-0132 24%in701aa			M12-4134 74%in703aa	Fibronecti n-binding protein (protein F)
50913505	M6_Spy0159	LPXSG	1037		M3-0104 25%in339aa					M12-4141 37%in98aa	Collagen adhesion protein
50913506	M6_Spy0160	LPXTG	557								Fimbrial structural subunit

Figure 198

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AI-2									
		aa	M1	M3	M5	M18	M49	M6	M12
M1									
gas15	gas15	VXGTG	762	M3-0098 50%in738aa	M5-orf78 60%in462aa	M18-0126 54%in469aa			M12-4135 54%in747aa
13621428	SPy0128 gas16	EVXGTG	340	M3-0100 40%in354aa	M5-orf80 41%in358aa	M18-0128 38%in357aa			M12-4137 40%in354aa
13621430	SPy0130 gas18	LPXGTG	215	M3-0102 32%200aa	M5-orf82 31%in213aa	M18-0130 32%in213aa			M12-4139 31%in206aa
									hypothetical al protein (fimbria)
									hypothetical al protein

Figure 199

AI-3										
			aa	M1	M3	M5	M18	M49	M6	M12
M3										
21909634	SpyM3_0098	VPXTG	744	gas15 51%in739aa		M5-orf78 58%in484aa	M18-0126 74%in482aa			M12-4135 55%in751aa
21909636	SpyM3_0100	QVXTG	344	gas16 40%in354aa		M5-orf80 64%in349aa	M18-0128 67%in345aa			M12-4137 61%in344aa
21909638	SpyM3_0102	LPXAG	195	gas18 32%in200aa		M5-orf82 98%in183aa	M18-0130 97%in183aa			M12-4139 99%in183aa
21909640	SpyM3_0104	LPXTG	696			M5-orf84 88%in656aa	M18-0132 88%in656aa			M12-4141 59%in612aa
										putative collagen binding protein (Cpb)
										conserved hypothetical al protein (fimbrial)
										hypothetical al protein
										protein F2 like fibronectin-binding

Figure 200A

Figure 200B

Figure 200B

Figure 200C

Figure 200C

M49												
56808848	VPXTG	744	gas15 55%in738aa	M3-0098 72%in743aa	M5-orf78 78%in483	M18-0126 61% in484				M12-4135 73%in752aa	putative collagen binding protein (Cpb)	
56808846	QVXTG	344	gas16 36%in355aa	M3-0100 66%in345aa	M5-orf80 61%in349aa	M18-0128 90%in344aa				M12-4137 62%in344aa	conserved hypothetic al protein (fimbrial)	
56808844	LPXAG	189	gas18 31%in206aa	M3-102 98%in189aa	M5-orf82 98%in189aa	M18-0130 98%in189aa				M12-4139 98%in189aa	hypothetic al protein	
56808842	LPXTG	1160		M3-104 59%in612aa	M5-orf84 50%in701aa	M18-0132 50%in701aa			M6-0157 32%in296aa	M12-4141 91%in1164aa	protein F2 like fibronectin -binding	

Figure 200D

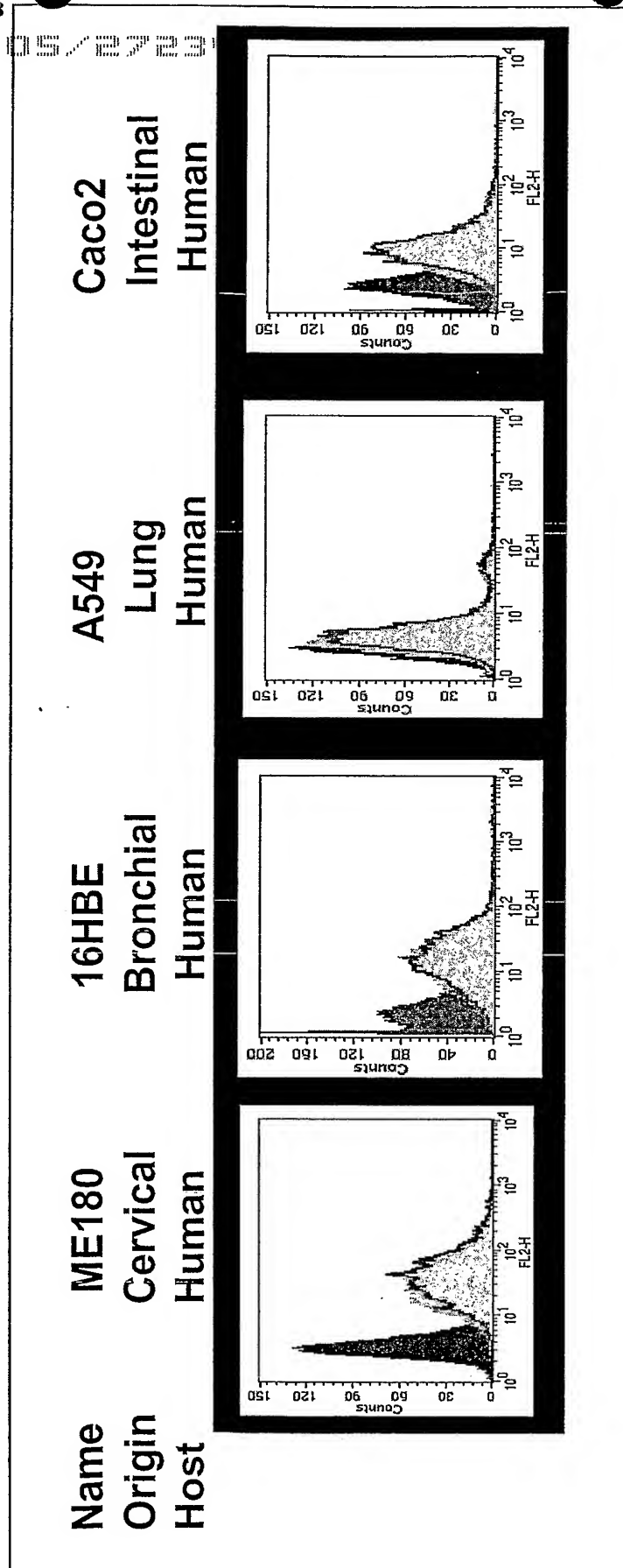
439/487

AI-4										
		aa	M1	M3	M5	M18	M49	M6	M12	
M12										
19224134	LPXTG	698	gas15 44%in297aa	M3-0098 49%in254aa				M6-0157 74%in703aa		protein F
19224135	VPXTG	756	gas15 54%in747aa	M3-0098 55%in751aa	orf78 80%in484aa	M18-0126 59%in483aa		M6-0157 51%in275aa		Cpa
19224137	QVXTG	342	gas16 40%in354aa	M3-0100 61%in344aa	orf80 65%in384aa	M18-0128 62%in344aa				EflSLA (fimbrial)
19224139	LPXAG	189	gas18 31%in206aa	M3-0102 99%in183aa	orf82 98%in189aa	M18-130 97%in189aa				Orf2
19224141	LPXTG	1161		M3-0104 59%in612aa	orf84 50%in701aa	M18-0132 50%in701aa				protein F2

Figure 201

Figure 202

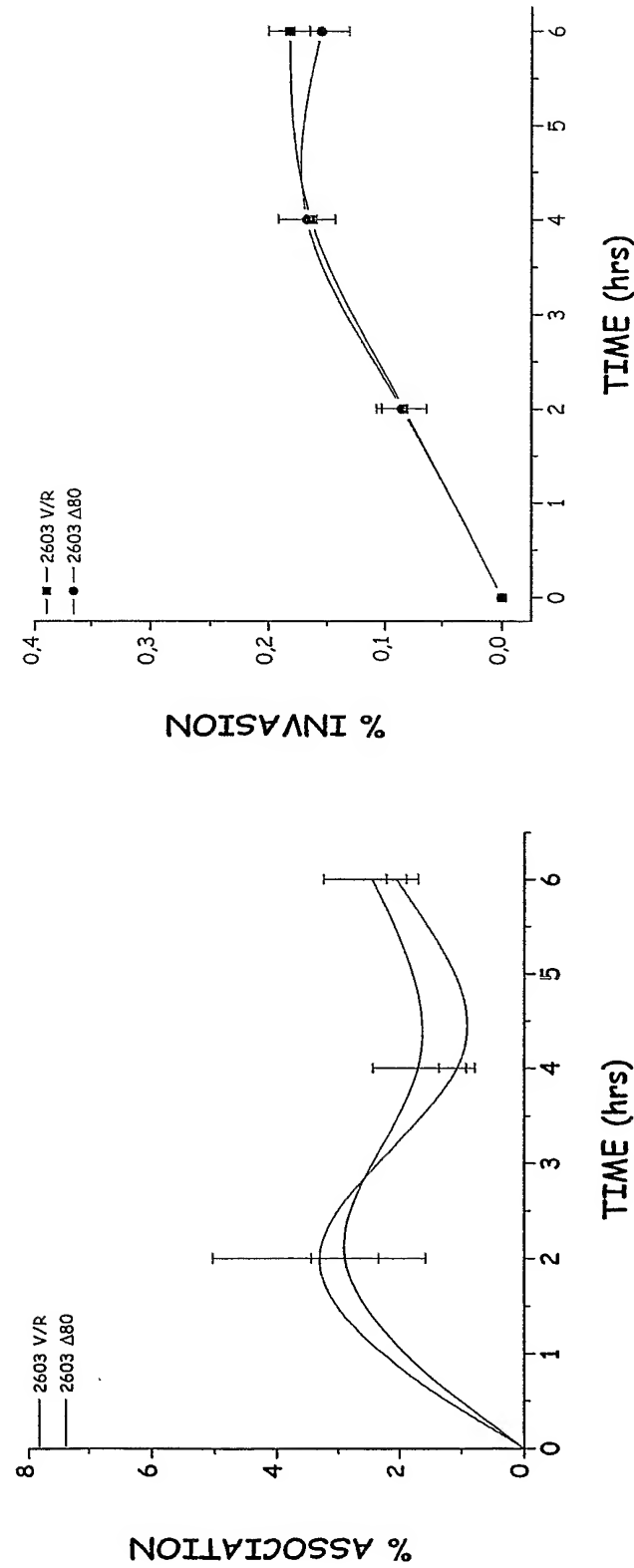
GBS80 recombinant protein does not bind to epithelial cells



Epithelial cells were incubated in the presence or absence of GBS80 protein and then a mouse a-GBS80 polyclonal antibody added. The cell were then stained with FITC-conjugated a-mouse IgG antibody. The violet area indicates cells treated with FITC-conjugated antibody alone. GBS80 binding, expressed as Dmean channel values, was measured by FACScan cytometer as difference in fluorescence intensity between cell incubated with or without GBS80. The same protocol was used for GBS101 protein binding to epithelial cells

Figure 203

Deletion of GBS80 protein does not affect the ability of GBS to adhere and invade ME180



ME180 cervical carcinoma epithelial cells were infected with GBS 2603 wild type or 2603 D80 isogenic mutant. After 2h infection, non-adherent bacteria were washed off and infection prolonged for further 2h and 4h. In invasion experiments, after each time point followed a 2h antibiotic treatment. Cells were then lysed with 1% saponin and lysates plated on TSA plates.

Figure 204

GBS80 binds to ECM proteins

ELISA with purified ECM components and native GBS80 protein

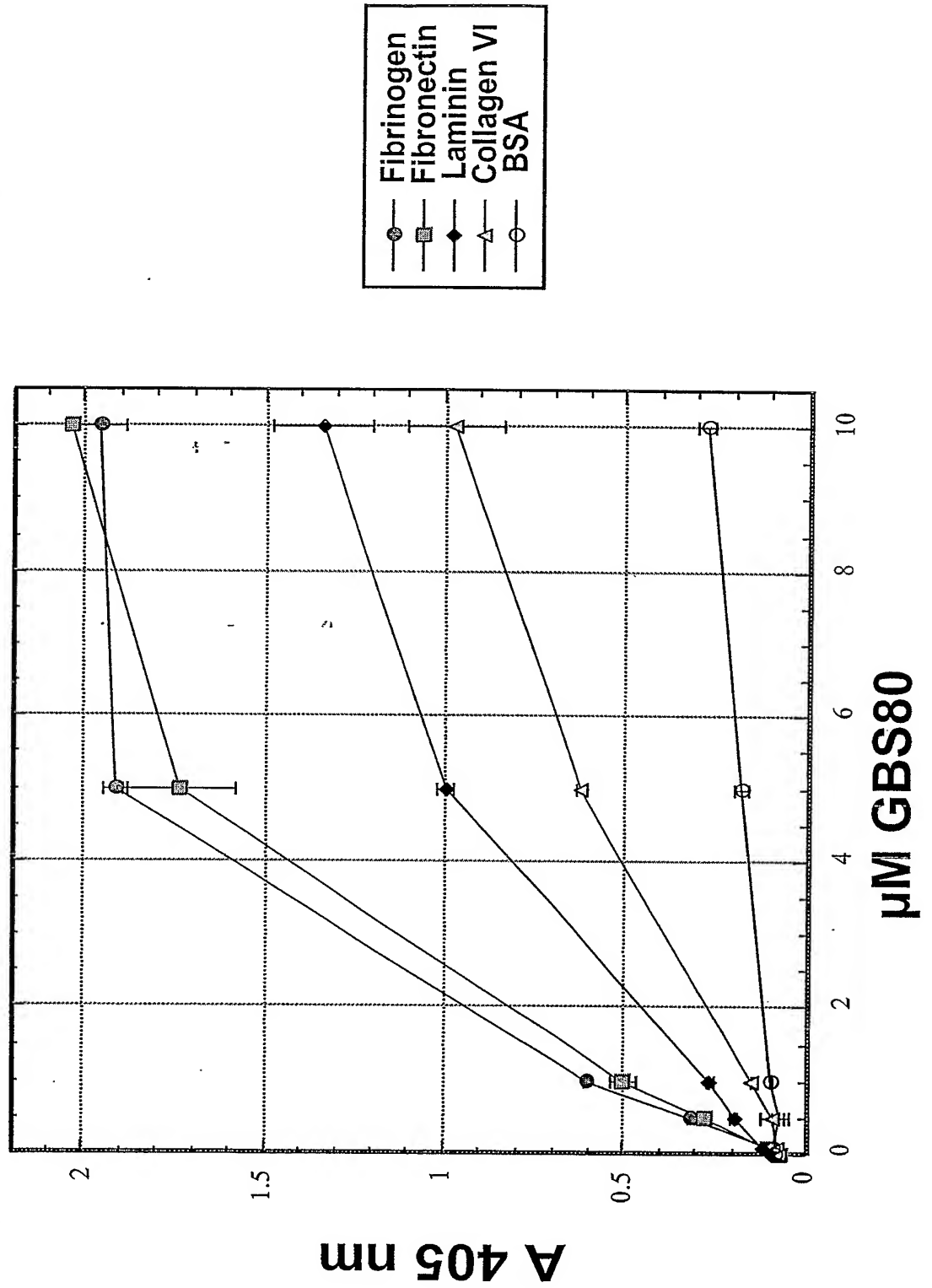
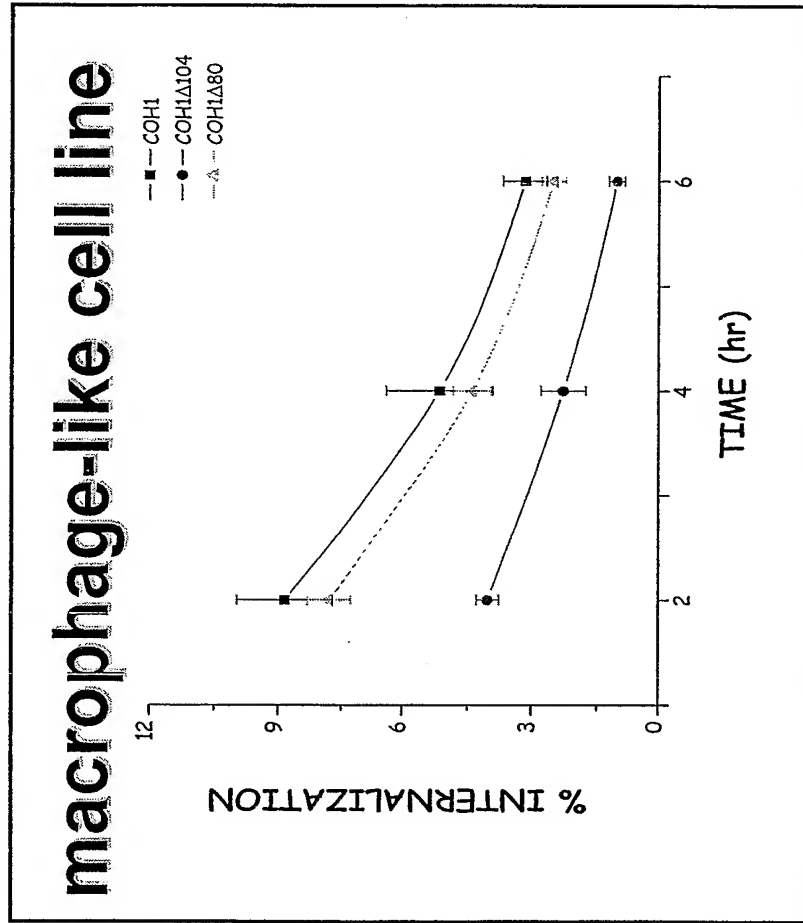


Figure 205

Deletion of GBS104 protein, but not GBS80, reduces the capacity of GBS to invade J774



J774 cells were infected with GBS COH1 wild type or COH1ΔGBS104/COH1ΔGBS80 isogenic mutants. After 1h infection, non-adherent bacteria were washed off and intracellular bacteria recovered at 2h, 4h and 6h post-antibiotic treatment. At each time point cells were lysed with 0.25% Triton X-100 and

Figure 206

**GBS104 knockout mutant strain translocates
through an epithelial monolayer less efficiently than
the isogenic wild type**

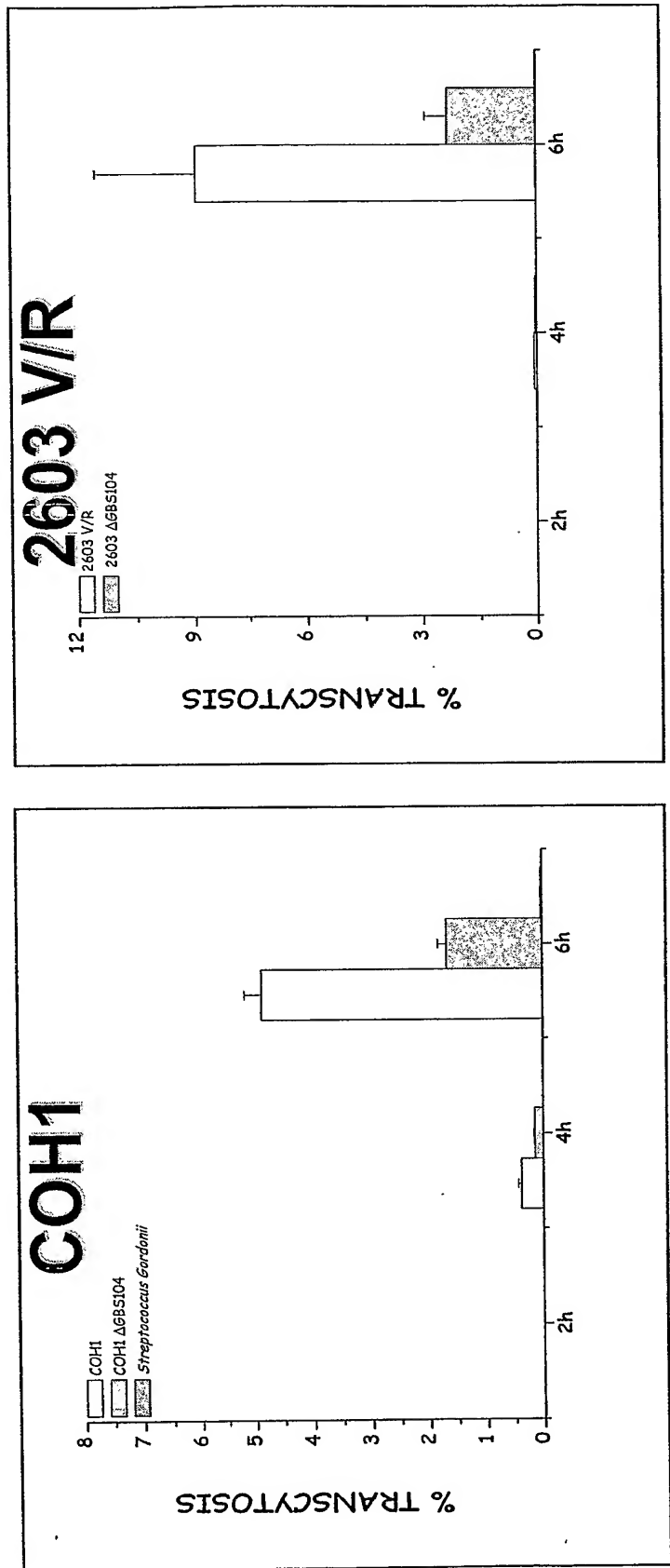
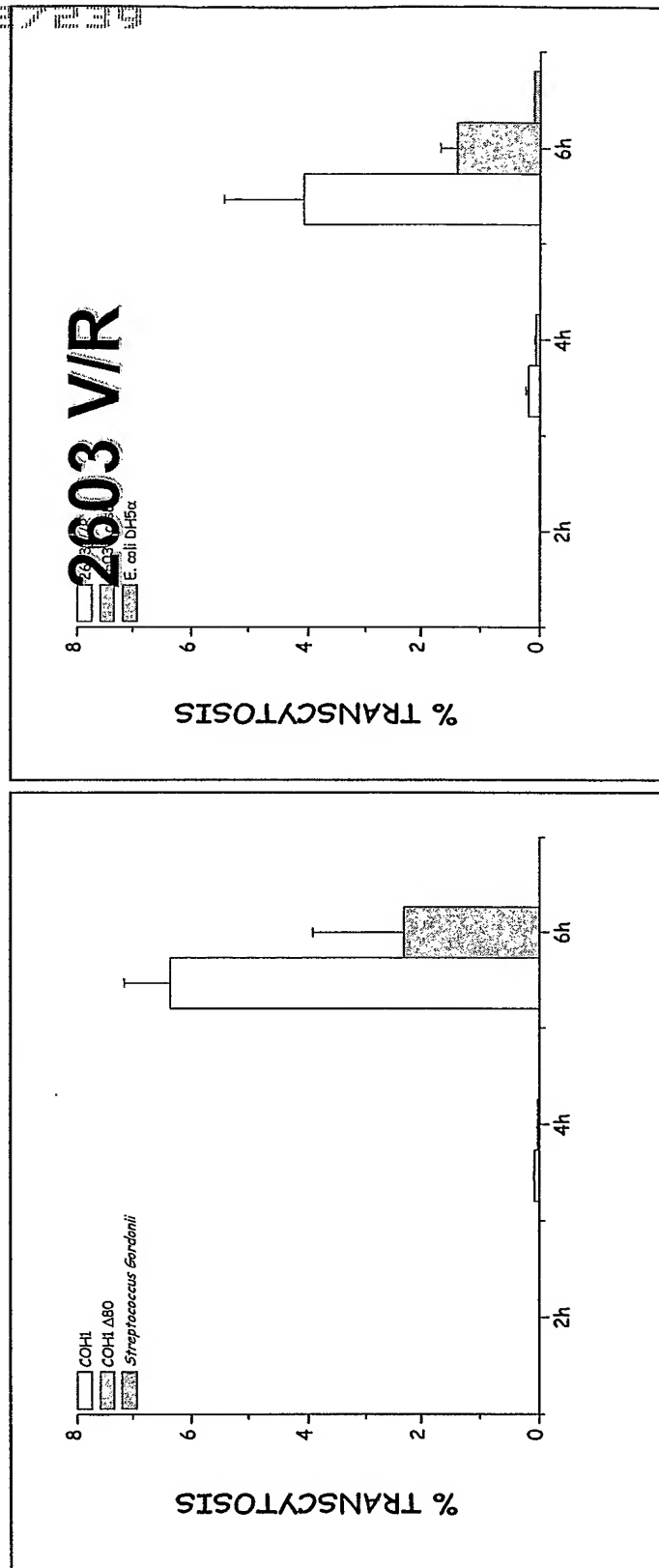


Figure 207

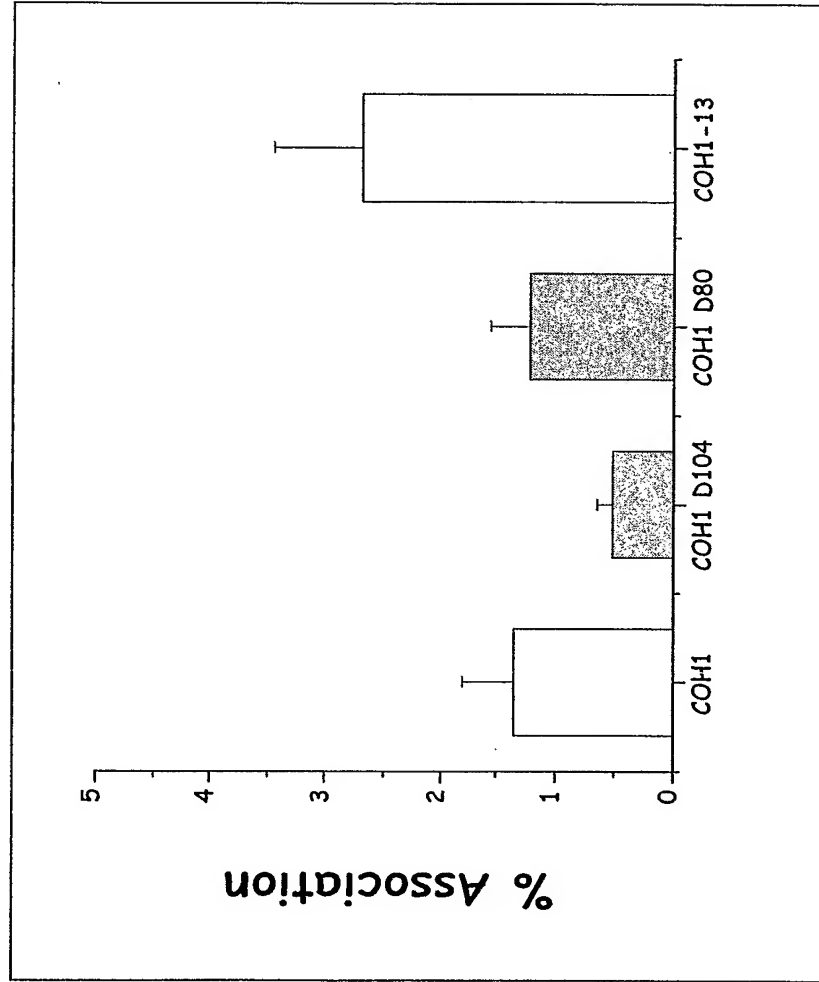
GBS80 knockout mutant strain partially loses the ability to translocate through an epithelial monolayer



Epithelial cells monolayers were inoculated with each bacterium in the apical chamber of a transwell system for 2h and then non-adherent bacteria washed off. Infection was prolonged for further 2h and 4h. Samples were taken from the media of the basolateral side and the number of colony forming units measured. Transepithelial electrical resistance measured prior and after infection gave comparable values, indicating the maintenance of the integrity of the monolayer.

Figure 208

GBS adherence to HUVEC endothelial cells



HUVEC cells were infected with GBS COH1 wild type or COH1DGBS104/COH1DGBS80 isogenic mutants. After 1h infection, non-adherent bacteria were washed off and cells lysed with 1% saponin and lysates plated on TSA plates.

COH1 strain growth rate

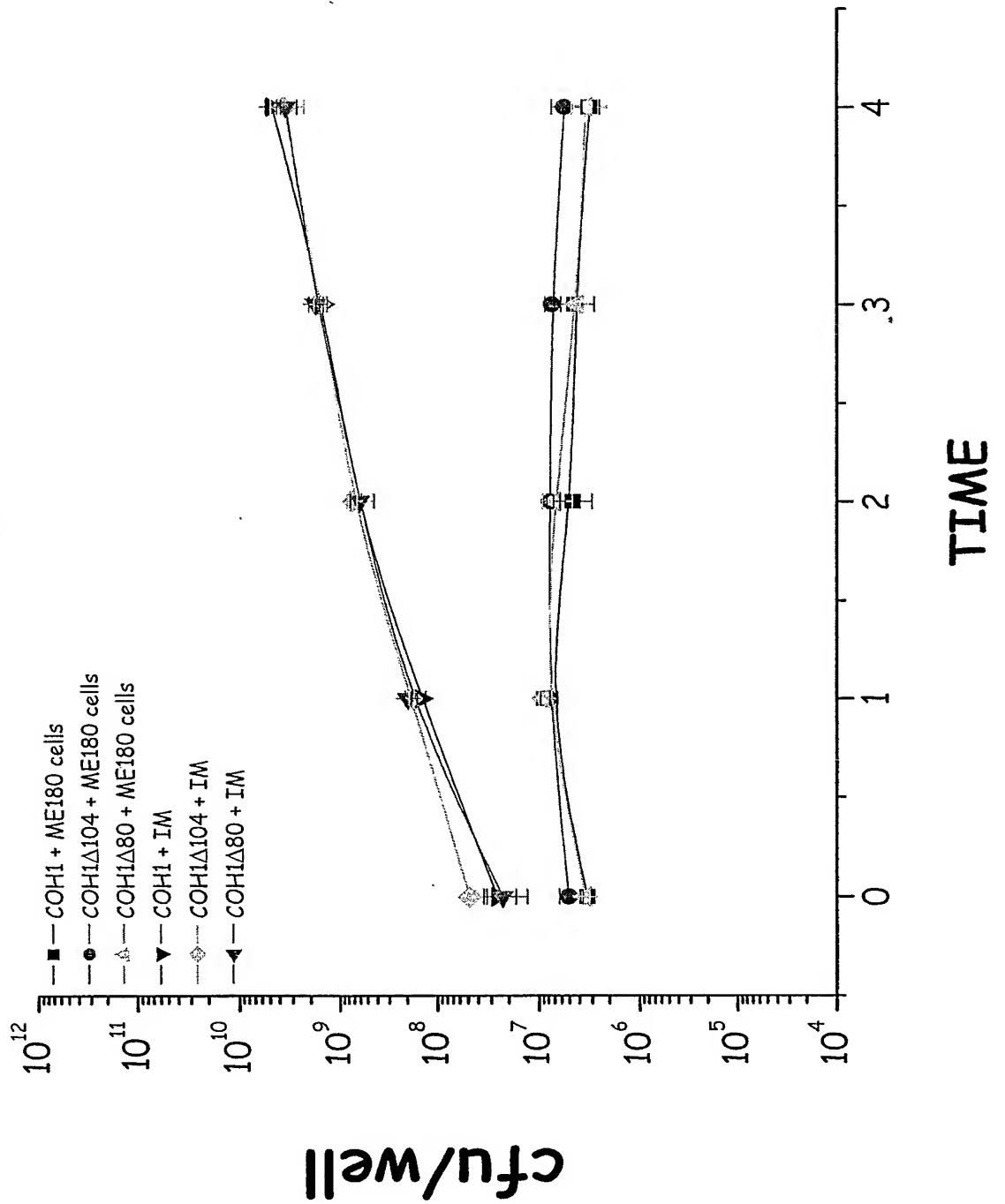


Figure 210

Binding of recombinant GBS104 protein to epithelial cells

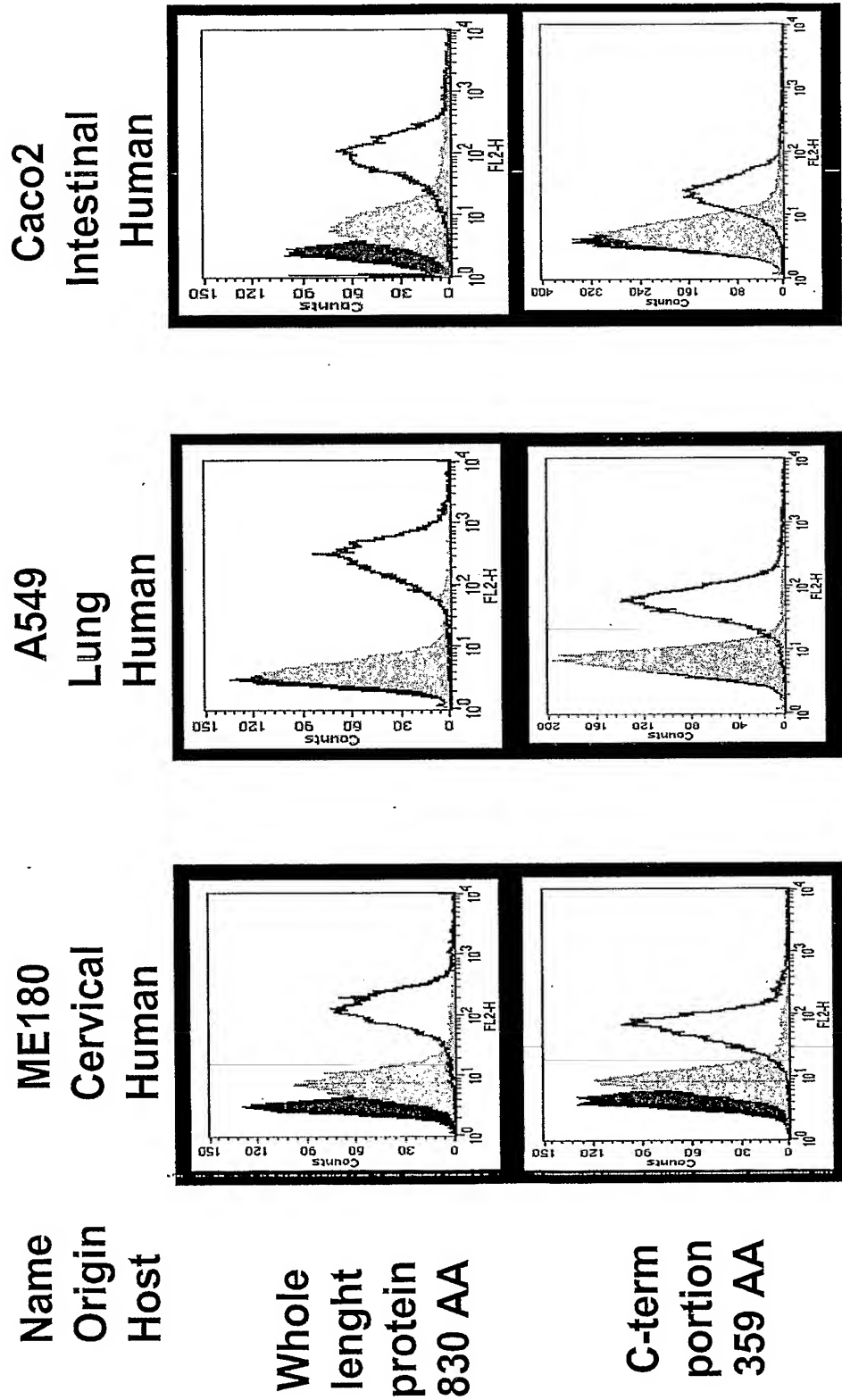
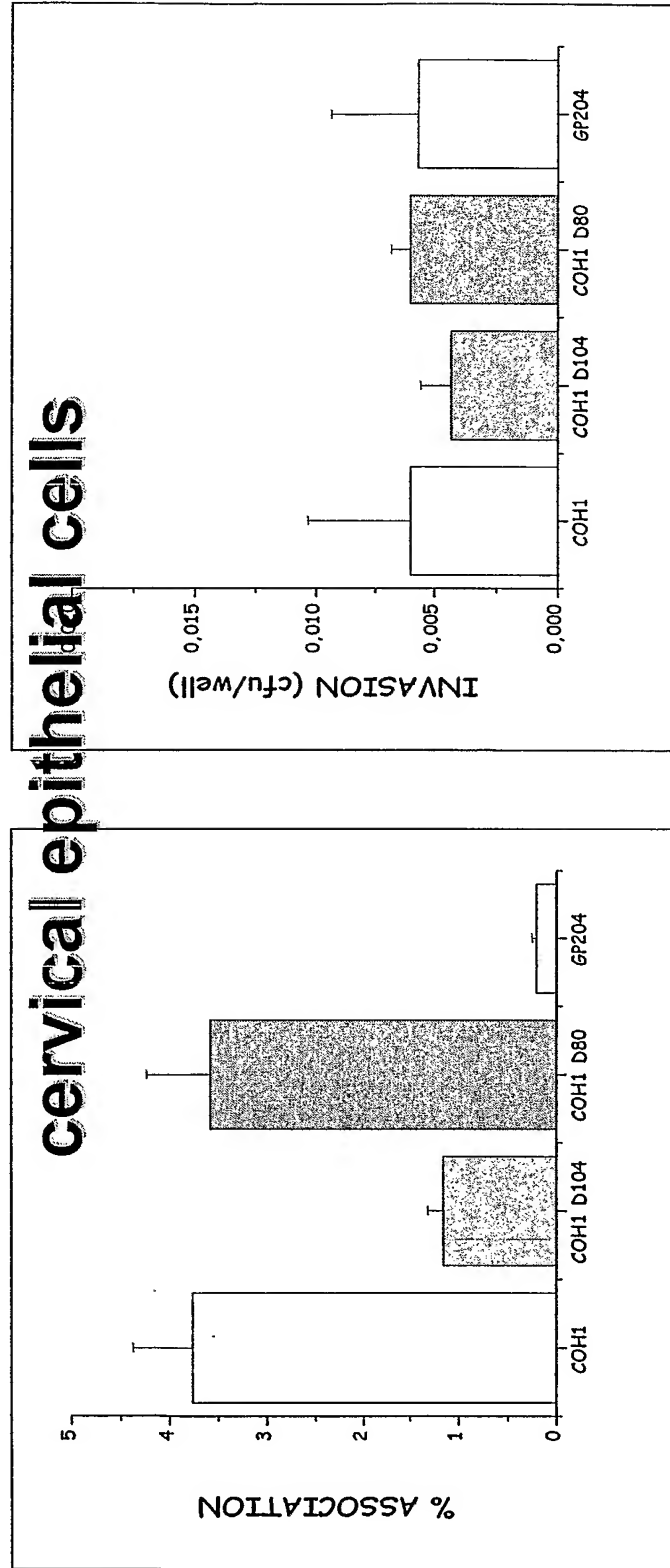


Figure 211

Deletion of GBS104 protein in the GBS strain COH1 reduces the ability of GBS to adhere to ME180

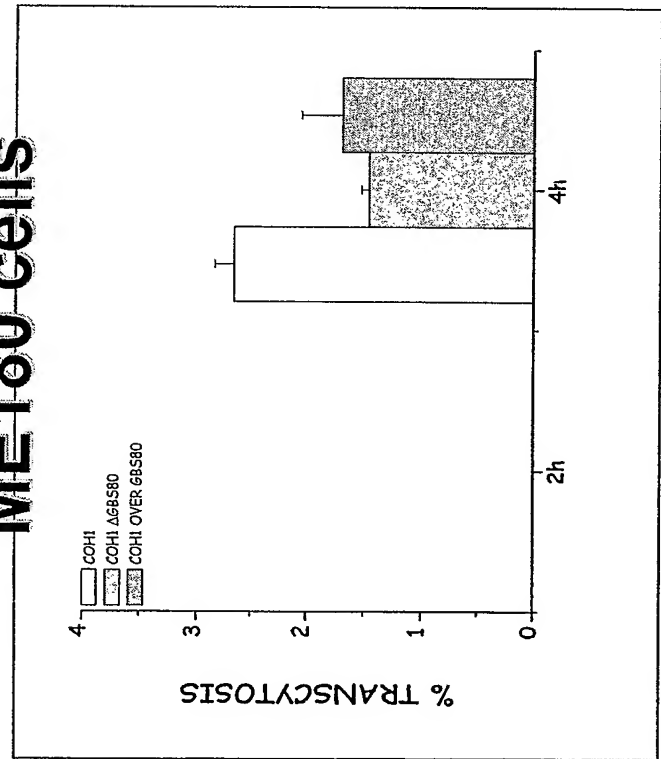


ME180 cervical carcinoma epithelial cells were infected with GBS COH1 wild type or COH1DGBS104/ COH1DGBS80 isogenic mutants. After 1h infection, non-adherent bacteria were washed off and cells lysed with 1% saponin and live bacteria plated on TSA plates

Figure 212

**COH1 overexpressing GBS80 protein has
an impaired capacity to translocate
through an epithelial monolayer**

ME180 cells



Caco2 cells

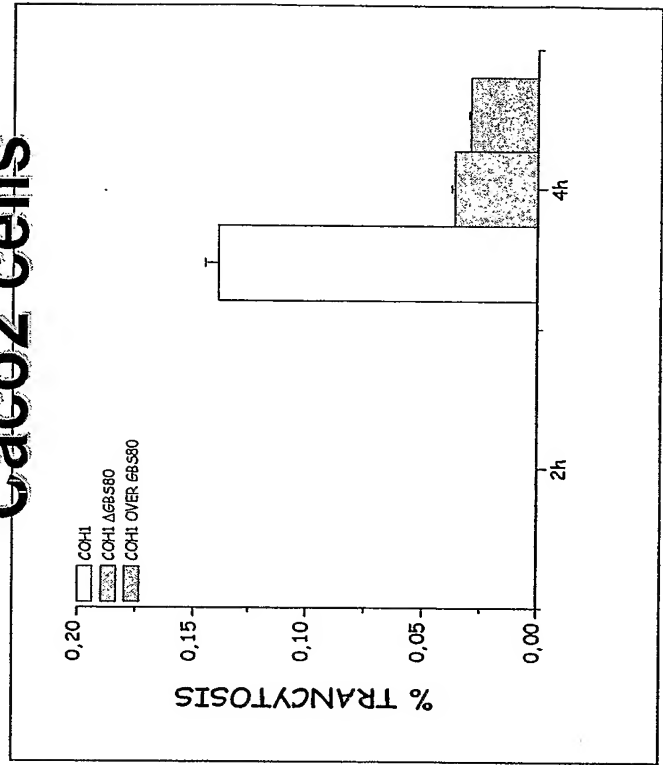


Figure 213

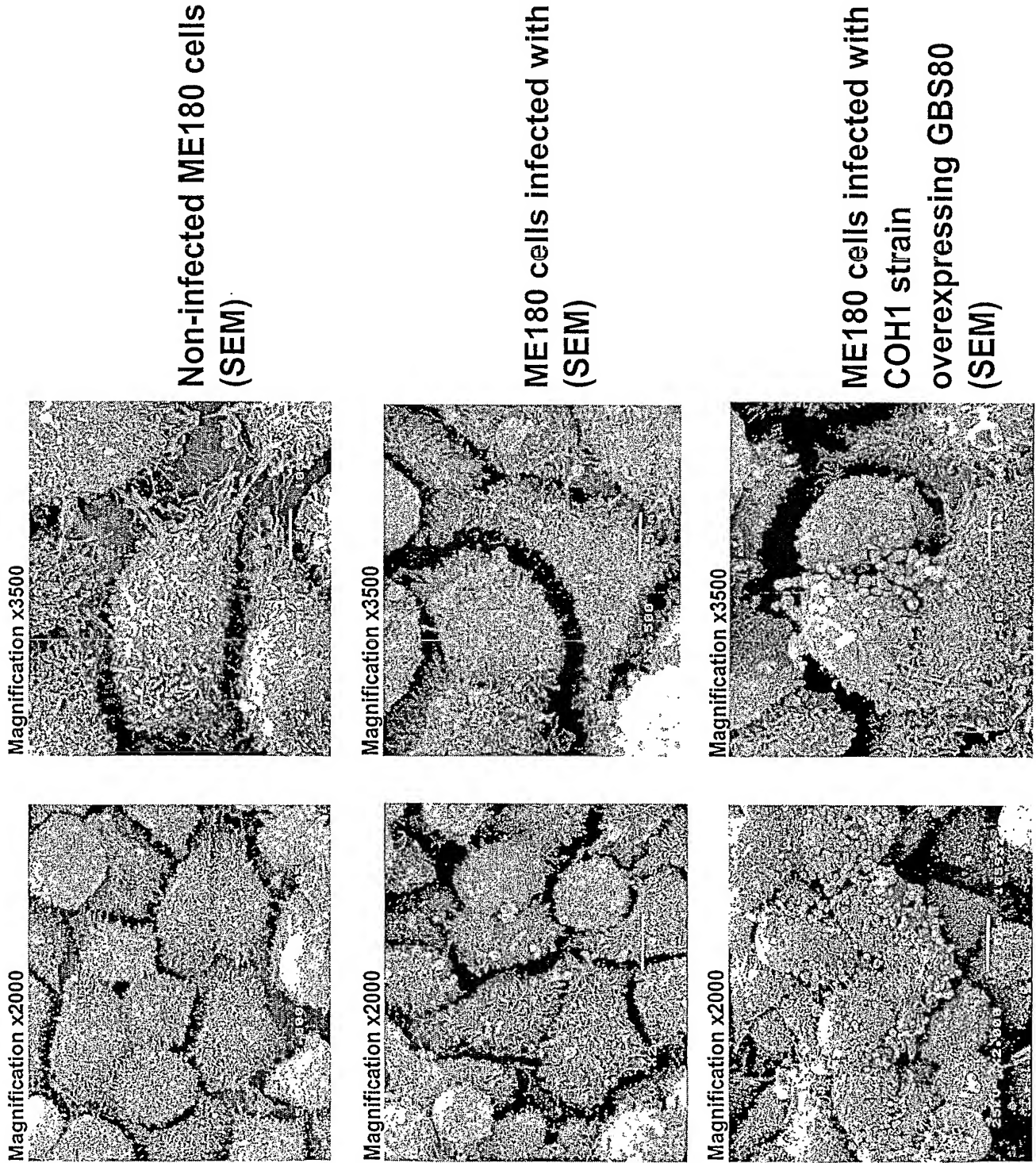
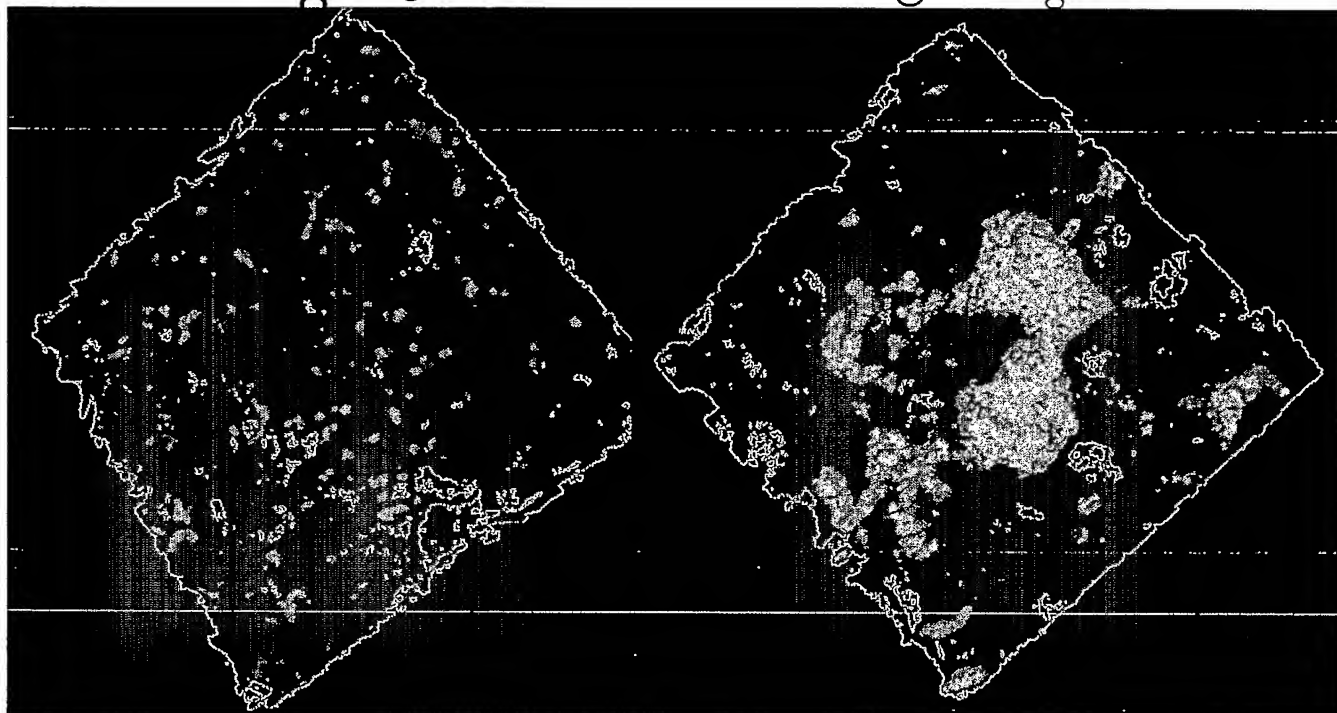


Figure 214



OH1 infection of ME180 cells

F-actin Blue

α -serotype III capsule Red

α -GBS80 Green

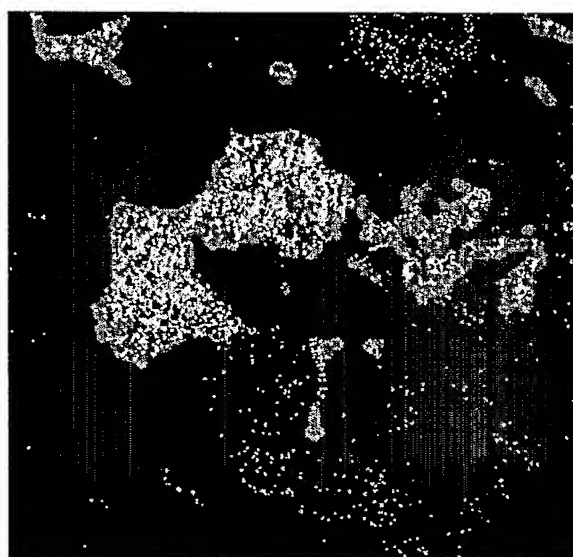
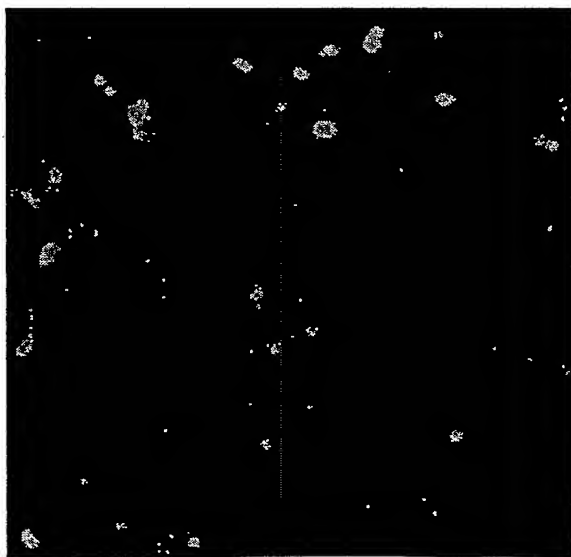
OH1 overexpressing GBS80

infection of ME180 cells

F-actin Blue

α -serotype III capsule Red

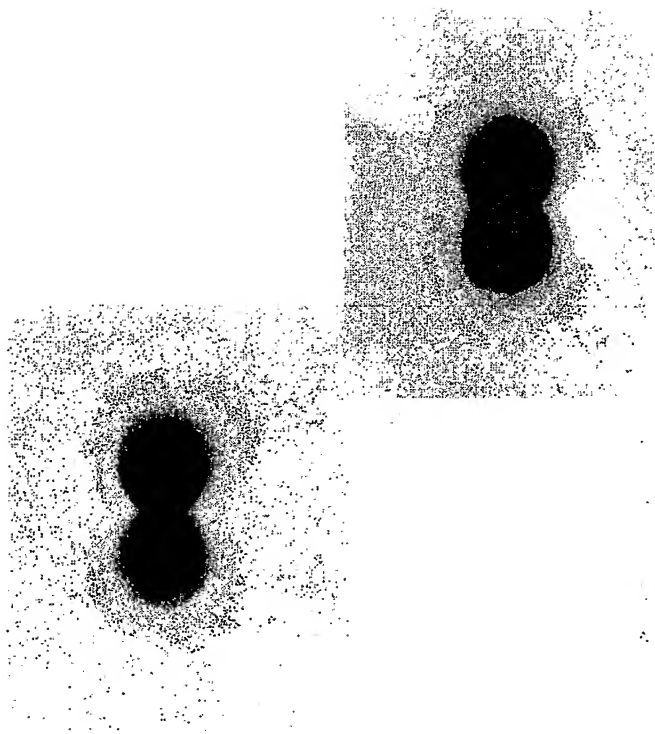
α -GBS80 Green



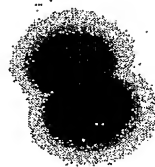
453/487

Figure 215

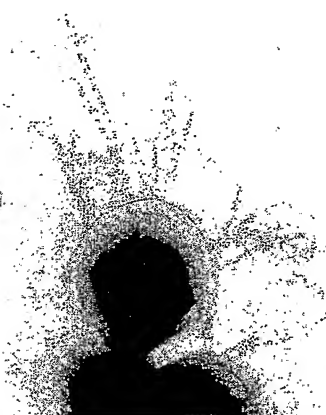
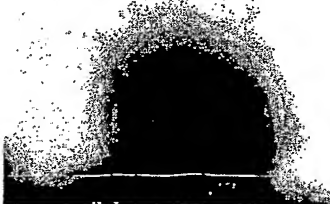
515 WT



515 Δ 59



515 Δ 59p59



α 59

α 59

Figure 216

WO 2006/078318

PCT/US2005/027239

454/487

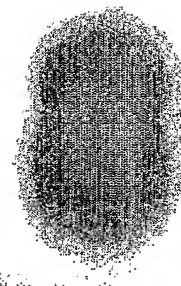
PCT/US2005/027239

515 Δ 67p67

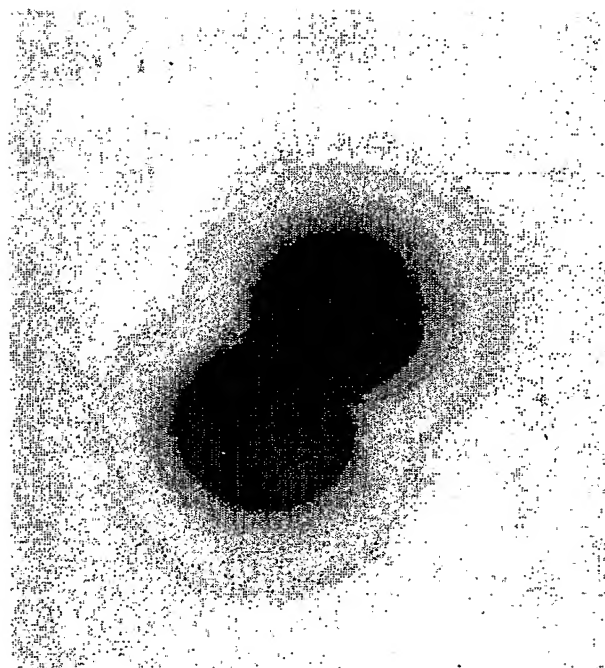


α 67

515 Δ 67



515 WT



α 67

Figure 217
GBS 67 binds to fibronectin

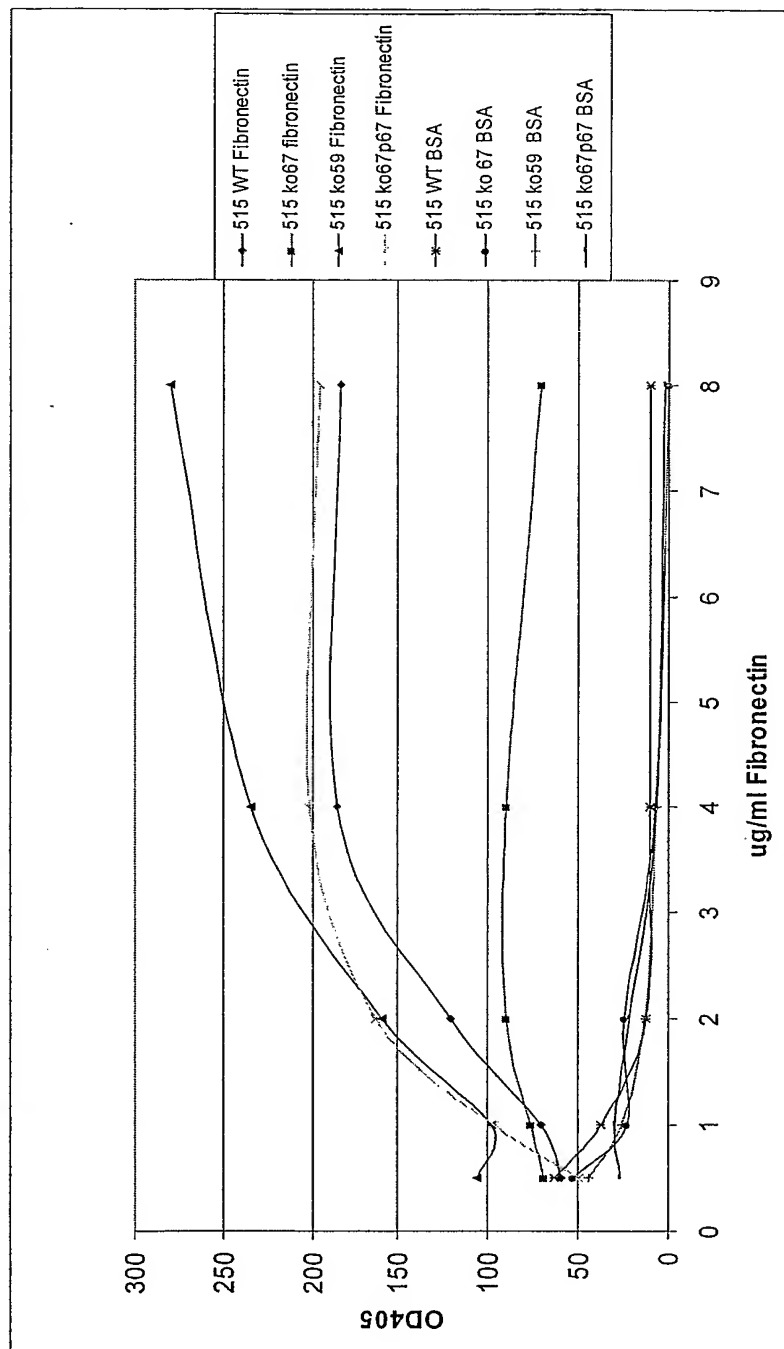


Figure 218

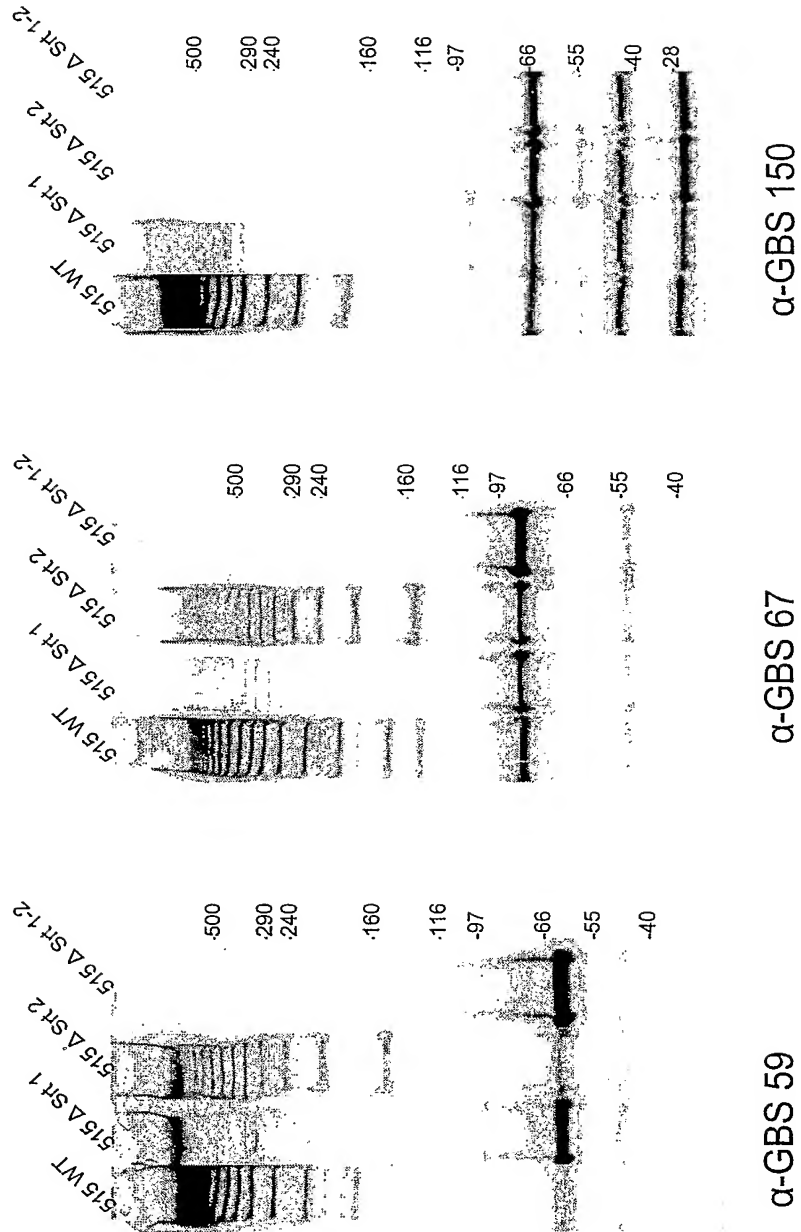
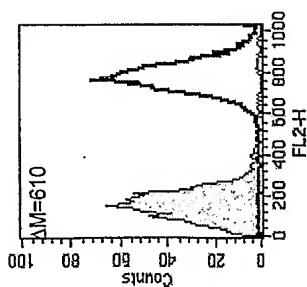
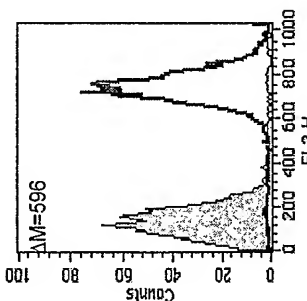


Figure 219

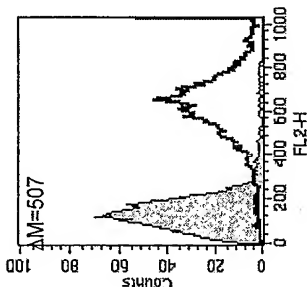
515 WT



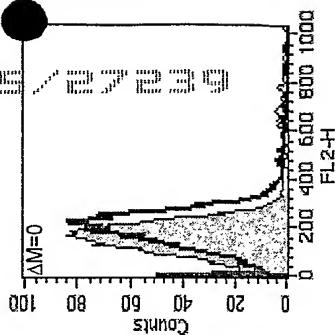
515 Δ Srt 1



515 Δ Srt 2

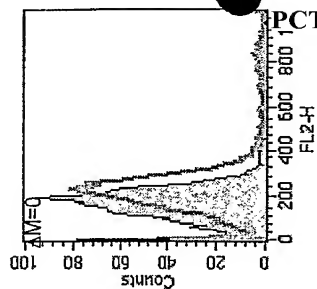
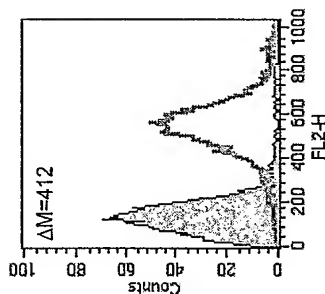
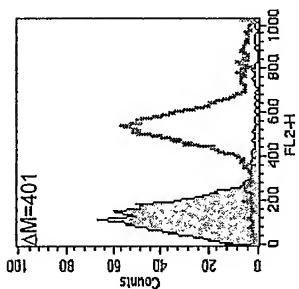
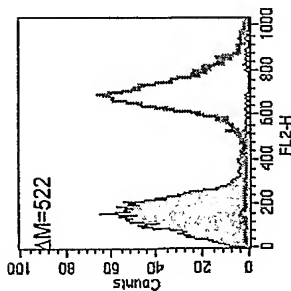


515 Δ Srt 1.2



457/487

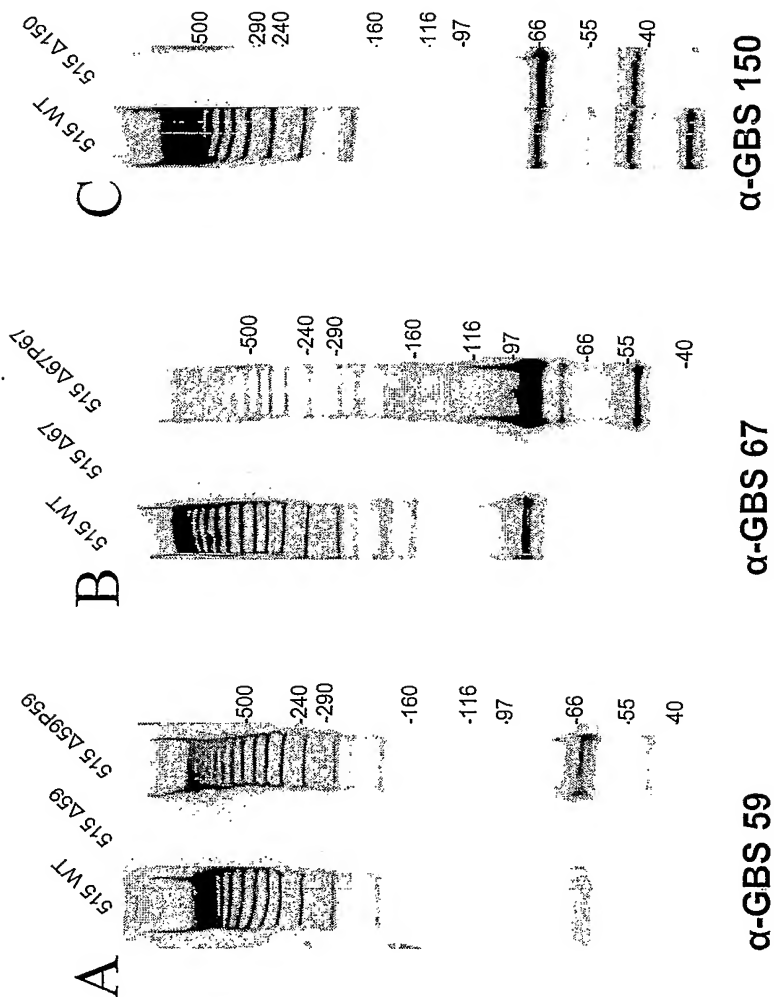
α67



α59

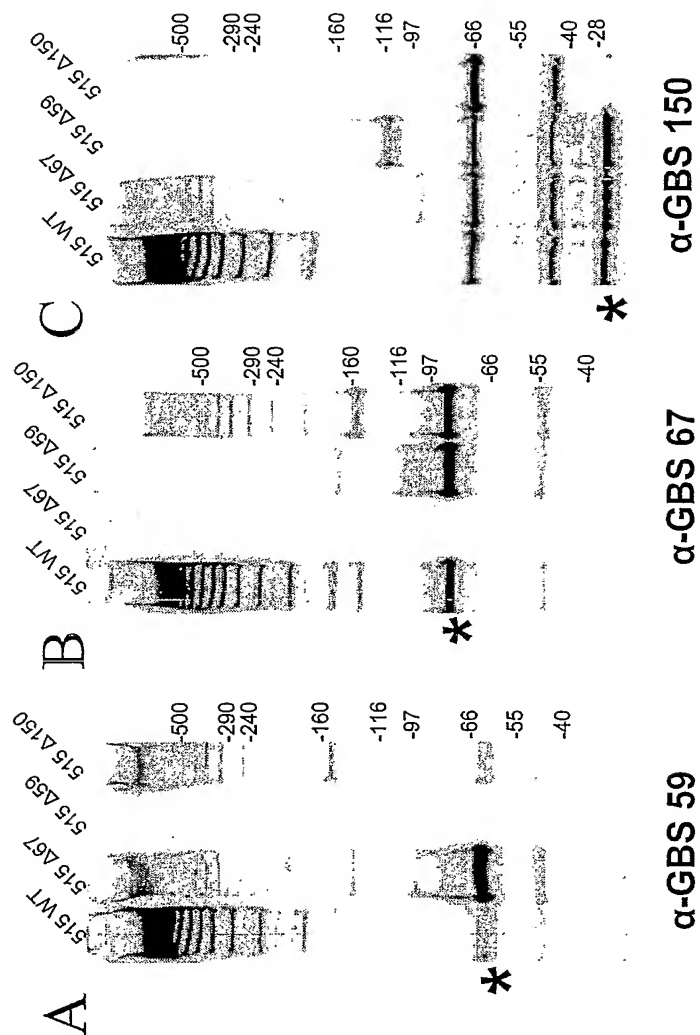


Figure 220



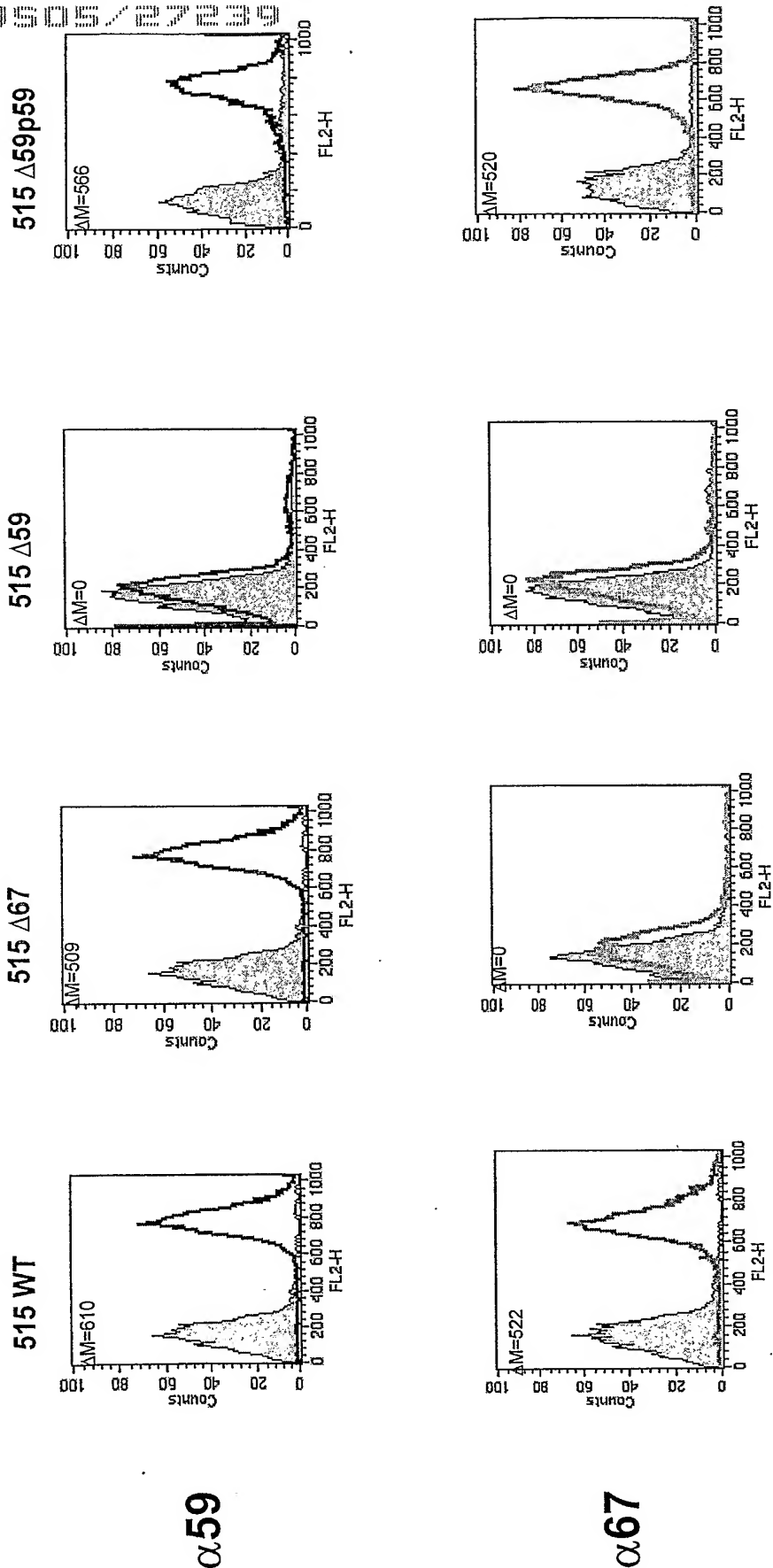
PCT/US05/27239/459/487

Figure 221



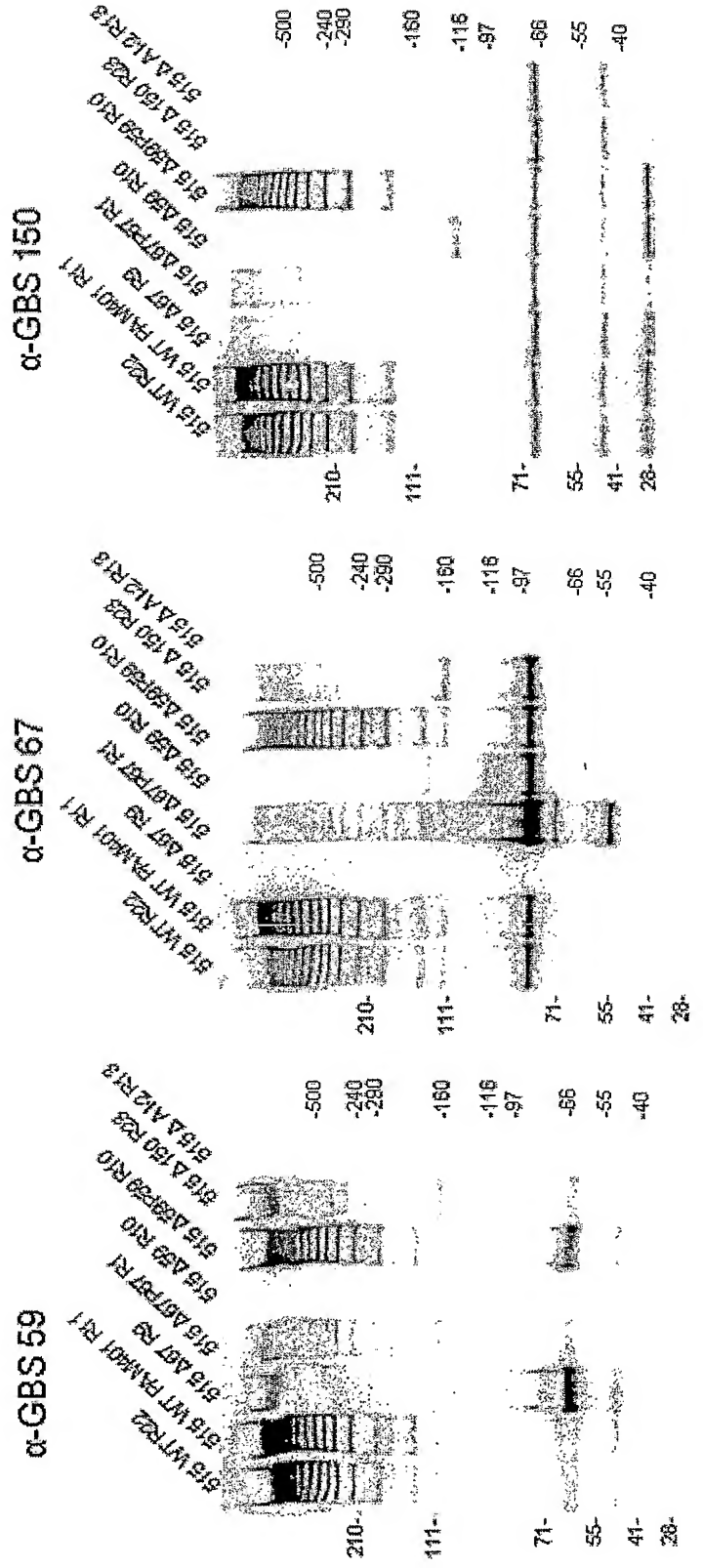
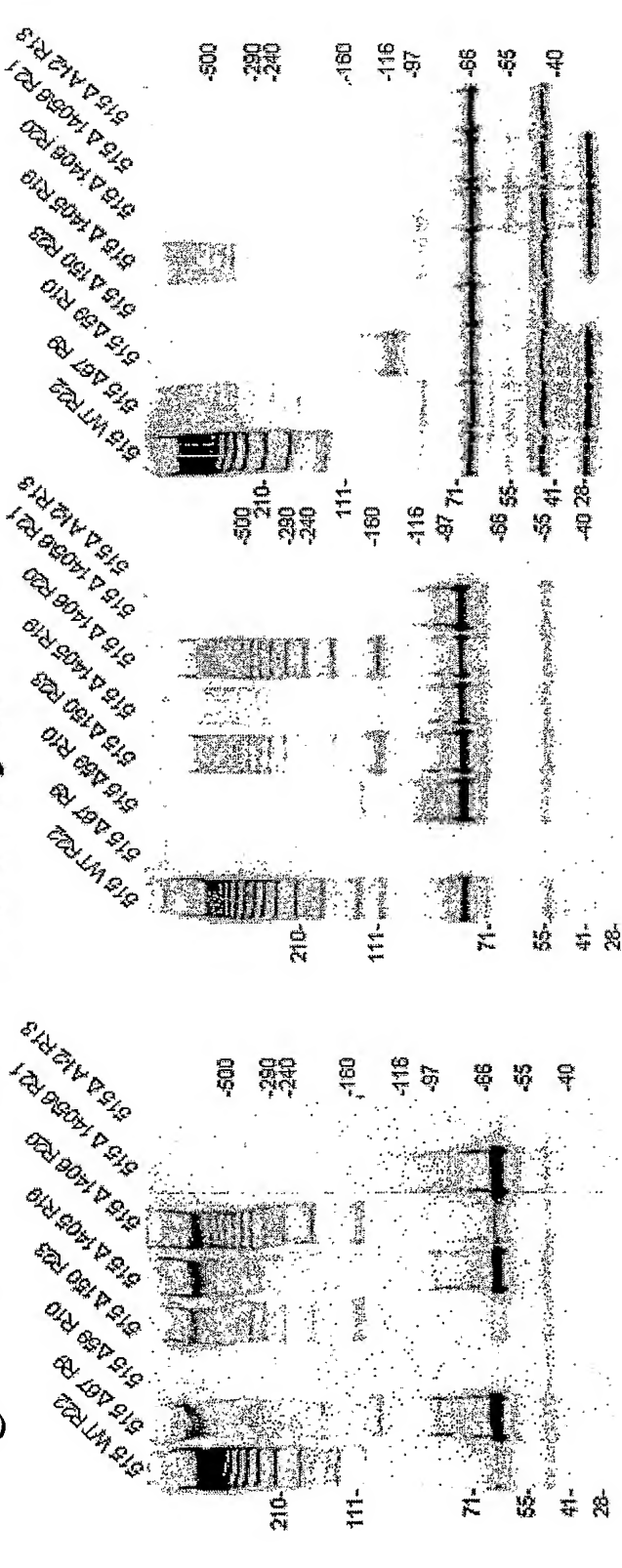
PCT/US05/27239

Figure 222



Summary WB

Figure 223



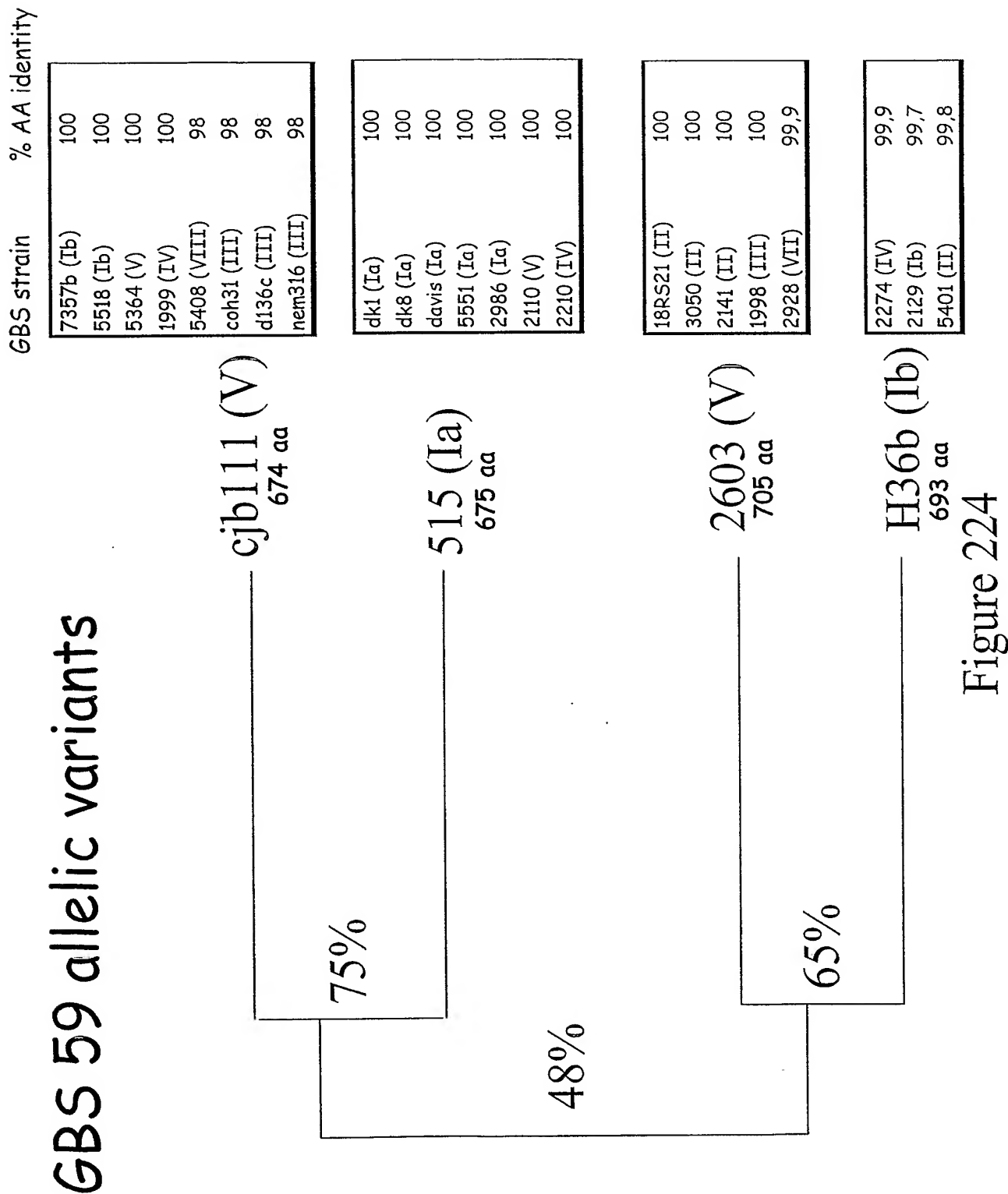
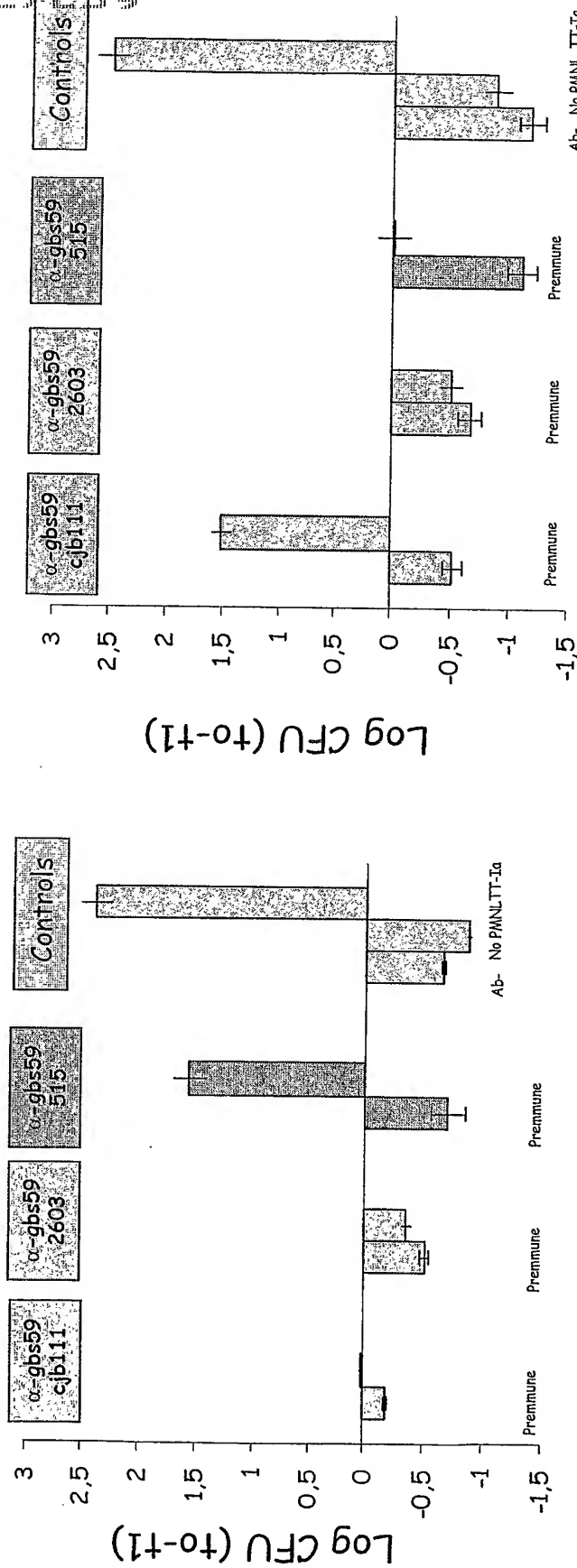


Figure 225

GBS 59 is opsonic only against homologous strain



• 515 (Ia) GBS strain

• cjb111 (V) GBS strain

Figure 226 A

		GBS 59		
GBS strains	Type	PCR	FACS (a-cjb111)	FACS (a-2603)
DK1	Ia	+	565	
DK8		+	559	
Davis		+	577	
515		+	583	0
090		+	0	0
2986		+	443	
5551		+	524	
H36B	Ib	+	0	410
7357b-		+	596	
5518		+	190	
D136C	III	+	504	
COH31		+	505	
1998		+	59	510
18RS21	II	+	0	353
DK21		+	249	0
3050		+	0	570
5401		+	0	400
2141		+	0	371
CJB111	V	+	625	0
2603		+	0	73
5364		+	593	
2110		+	590	0
2274	IV	+	0	400
1999		+	594	
2210		+	636	
5408	VIII	+	537	
CJB110	NT	+	0	0
1169		+	227	0

		GBS 59		
GBS strains	Type	PCR	FACS (a-cjb111)	FACS (a-2603)
A909	Ia	-	22	0
2177	Ib	-	75	
COH1	III	-	0	
M732		-	0	
M781		-	17	
5376		-	60	
5435	VIII	-	55	0
SMU071		-	0	
JM9130013		-	0	

Figure 226 B

Figure 227 A

		FACS (D Mean)				
GBS strains	Type	GBS 80	GBS 104	GBS 67	GBS 322	GBS 59
DK1	Ia	0	0	478	153	565
DK8		0	0	475	213	559
Davis		0	0	430	86	577
515		0	0	409	227	583
090		0	0	0	0	0
A909		46	29	0	0	0
2986		0	0	397	0	443
5551		0	0	485	36	524
2177	Ib	477	355	66	323	0
H36B		0	0	444	105	410
7357b-		91	0	316	102	596
5518		31	0	162	0	190
COH1	III	305	226	0	130	0
D136C		40	40	406	460	504
COH31		0	0	273	479	505
M732		141	101	0	292	0
M781		111	136	0	224	0
1998		140	77	350	288	510
5376		165	156	0	76	0
5435		93	100	0	88	0
18RS21	II	0	0	103	471	353
DK21		0	0	331	342	249
3050		71	46	460	188	570
5401		75	28	618	135	400
2141		0	0	370	76	371
CJB111	V	365	236	481	58	625
2603		62	0	105	293	73
5364		454	281	394	463	593

2110		0	0	589	0	590
2274		123	62	484	161	400
1999	IV	0	389	453	55	594
2210		0	0	574	0	636
SMU071		556	393	74	170	0
JM9130013	VIII	587	436	72	133	0
5408		0	0	433	0	537
CJB110		0	0	245	587	0
1169	NT	0	0	443	213	227
D Mean > 200		6/37 (16%)	7/37 (19%)	24/37 (65%)	14/37 (38%)	24/37 (65%)

Figure 227B

Figure 228

		FACS (ΔMean)																Δmean
GBS Strain	Type	GBS 80 142-F		GBS 104 Mab		GBS 322 86		GBS 67 81		GBS 67 H36B		GBS 59 2603		GBS 59 CJB111		GBS 59 515		neg. control
cdc-1	II	114	95	0	0	122	122	360	341	422	403	92	73	254	235	306	287	19
cdc-2	IB	173	69	92	0	95	75	552	448	590	486	135	31	635	531	197	93	104
cdc-3	II	566	508	360	302	85	60	364	306	433	375	111	53	448	390	310	252	58
cdc-4	V	524	432	337	245	284	204	577	485	625	533	105	13	674	582	303	211	92
cdc-5	II	140	0	0	0	462	300	487	297	563	373	175	0	373	183	440	250	190
cdc-6	V	544	484	361	301	95	95	586	526	601	541	55	0	686	626	302	242	60
cdc-7	III	155	116	44	5	134	118	95	56	138	99	74	35	92	53	91	52	39
cdc-8	III	347	304	192	149	74	62	98	55	170	127	72	29	88	45	108	65	43
cdc-9	II	89	65	0	0	226	191	390	366	504	480	181	157	317	293	410	386	24
cdc-10	IA	46	24	0	0	152	152	494	472	531	509	43	21	16	0	48	26	22
cdc-11	IA	17	0	0	0	295	135	569	550	569	550	47	28	467	448	648	629	19
cdc-12	V	439	430	290	281	60	30	174	165	227	218	52	43	139	130	207	198	9
cdc-13	IA	33	0	0	0	216	146	469	436	469	436	100	67	361	328	571	538	33
cdc-14	III	78	68	10	0	213	191	50	40	85	75	38	28	69	59	67	57	10
cdc-15	III	119	53	24	0	108	98	48	0	127	61	89	23	105	39	100	34	66
cdc-16	V	363	335	177	149	310	270	70	42	127	99	48	20	130	102	128	100	28
cdc-17	III	160	0	163	0	408	248	377	217	410	250	441	281	359	199	167	7	160
cdc-18	III	49	28	0	0	239	218	34	13	36	15	16	0	49	28	56	35	21
cdc-19	III	182	101	0	0	361	280	310	229	312	231	384	303	220	139	0	0	81
cdc-20	V	348	304	203	159	380	336	166	122	211	167	114	70	232	188	128	84	44
cdc-21	II	222	132	83	0	150	60	331	241	336	246	0	0	420	330	59	0	90
cdc-22	IA	0	0	13	13	43	43	238	238	238	238	43	43	38	38	429	429	0
cdc-22 (9-6-05)		23	0	34	0	110	20	310	220	320	230	113	23	117	27	344	254	90
cdc-23	V	484	484	374	374	278	278	124	124	206	206	11	11	91	91	236	236	0
cdc-24	V	137	52	0	0	333	248	90	5	110	25	110	25	120	35	70	0	85
cdc-25	IA	0	0	0	0	351	190	530	370	565	405	495	335	442	282	625	465	160
cdc-26	II	117	2	0	0	185	70	210	95	285	170	30	0	175	60	210	95	115
cdc-27	III	323	95	34	0	498	270	346	118	406	178	424	196	314	86	64	0	228
cdc-28	V	150	92	20	0	132	74	462	404	505	447	0	0	526	468	78	20	58
cdc-29	IV	90	73	65	48	195	178	90	73	150	133	150	133	138	121	110	93	17
cdc-30	V	390	187	336	133	348	145	229	26	244	41	113	0	268	65	223	20	203
cdc-31	IA	22	0	68	0	306	182	368	244	386	262	126	2	248	124	426	302	124
cdc-32	IA	45	0	12	0	260	175	190	105	205	120	30	0	100	15	185	100	85
cdc-33	II	50	0	0	0	306	156	134	0	237	87	4	0	180	30	190	40	150
cdc-34	III	152	60	47	0	342	250	44	0	74	0	27	0	102	8	48	0	92
cdc-35	V	227	227	40	40	246	246	395	395	415	415	0	0	550	550	142	142	0
cdc-36	IB	25	15	8	0	30	20	154	144	174	164	33	23	222	212	20	10	10
cdc-37	III	168	53	61	0	361	246	82	0	133	18	83	0	132	17	75	0	115
cdc-38	II	140	14	30	0	338	212	124	0	198	72	158	32	138	12	104	0	126
cdc-39	II	126	0	0	0	316	148	466	298	514	346	438	270	184	16	34	0	168
cdc-40	V	420	366	214	160	22	0	103	49	162	108	90	36	209	155	192	138	54
cdc-41	II	146	31	15	0	380	265	330	215	425	310	140	25	280	165	315	200	115

Figure 229

Expected strain coverage

MIX GBS proteins

n. antigens FACS	vaccine options					w/o 322			w/o 104+322			w/o 59+322		
	80+104+67+59+322	80+104+67+322	80+104+67+59	80+104+67+59	80+67+59	80+104+67	80+104+67+59	80+104+67	80+67+59	80+104+67	80+104+67+59	80+104+67	80+67+59	80+104+67+59
1	89%		89%	80%	80%			79%	79%			79%	79%	74%
2	74%		51%	71%	64%			24%				24%	16%	16%
3	23%		14%	17%	16%			13%				13%		

- GBS 322 but not GBS 59 is important to increase strain coverage
- GBS 59 probably could be useful to increase the vaccine strength

Assumption:

- Protein antigens that are highly accessible to antibodies confer 100% protection with suitable adjuvants

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Figure 230

GBS 59 opsonophagocytic activity is comparable to that of the four-protein mix

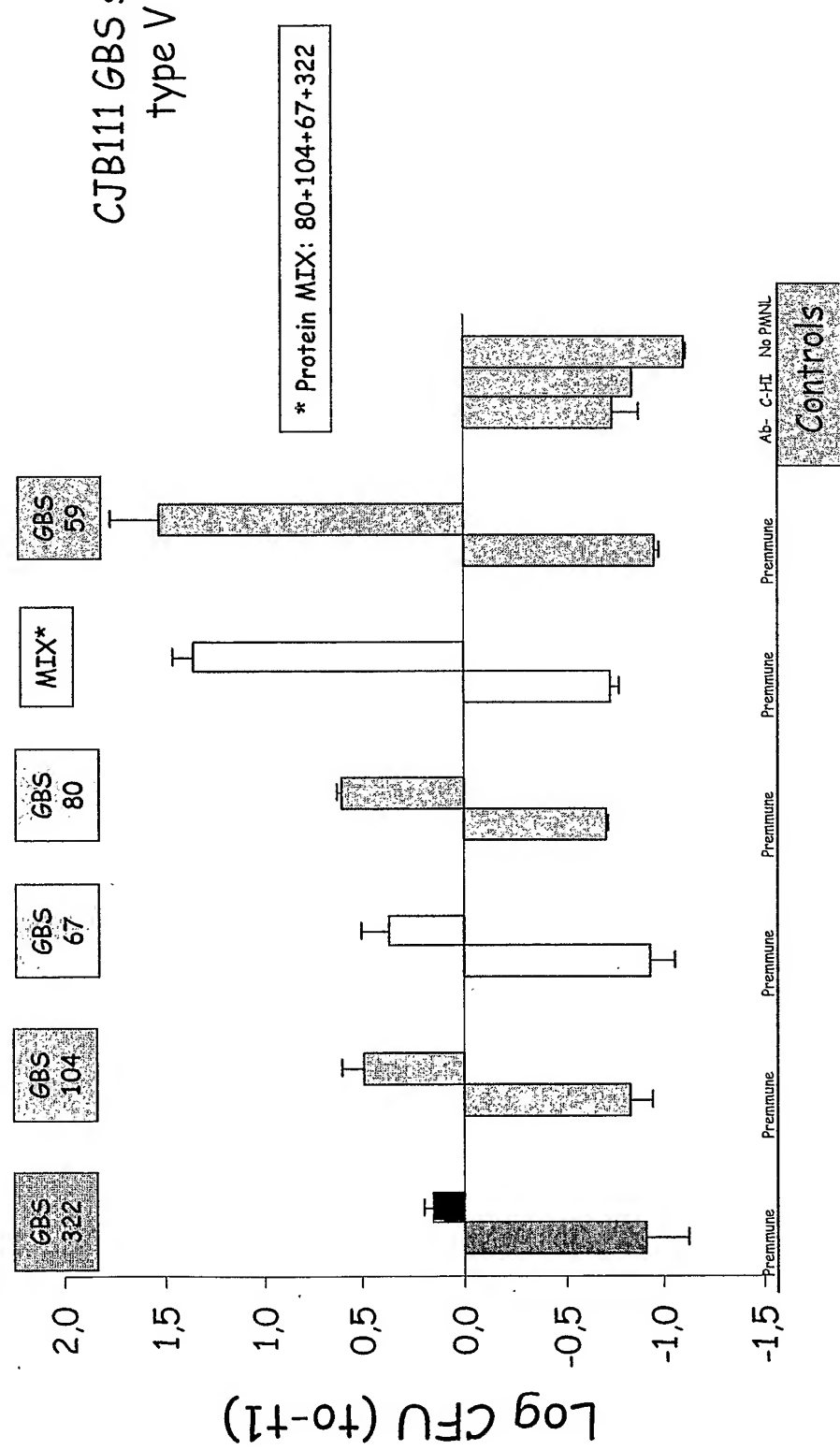


Figure 231

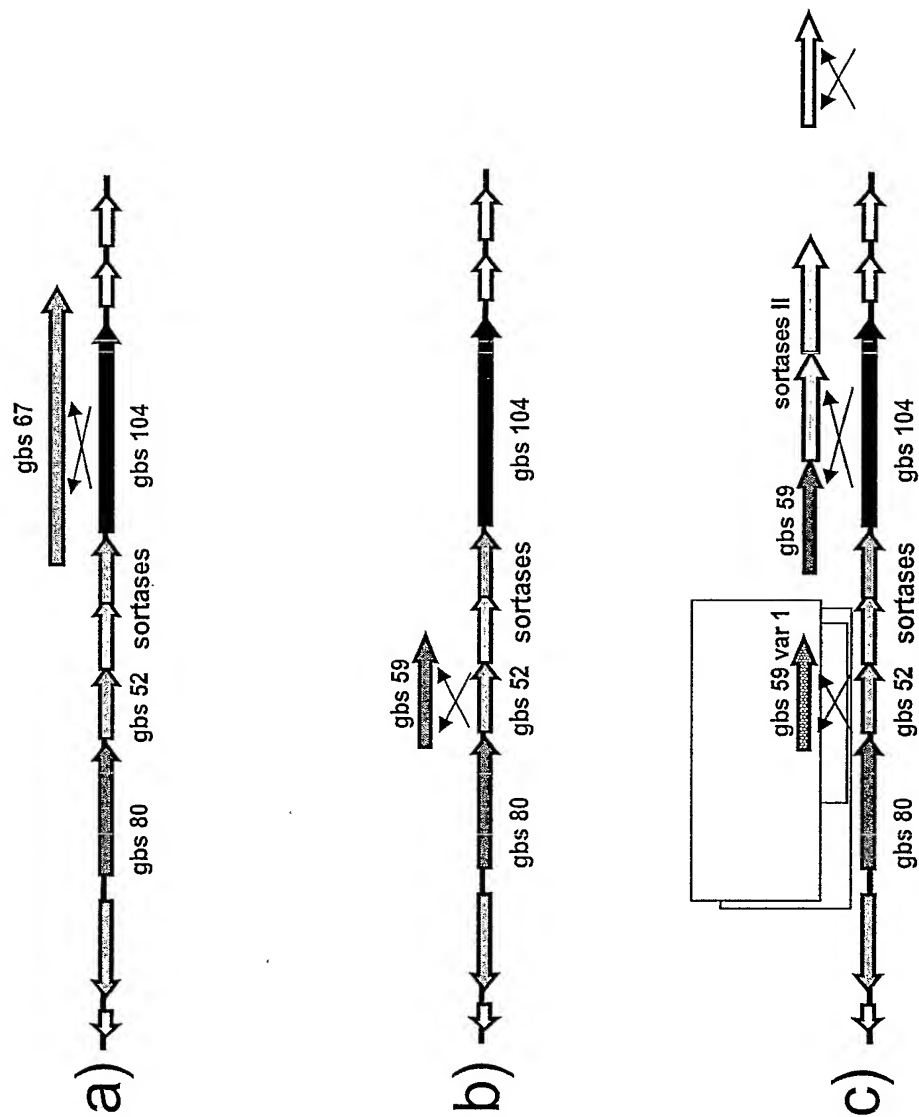
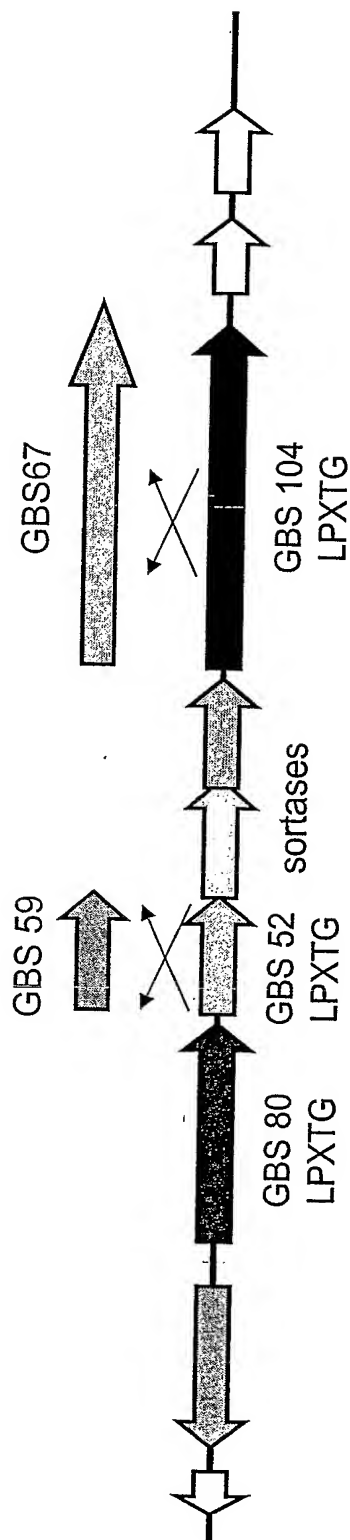


Figure 232



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Figure 233

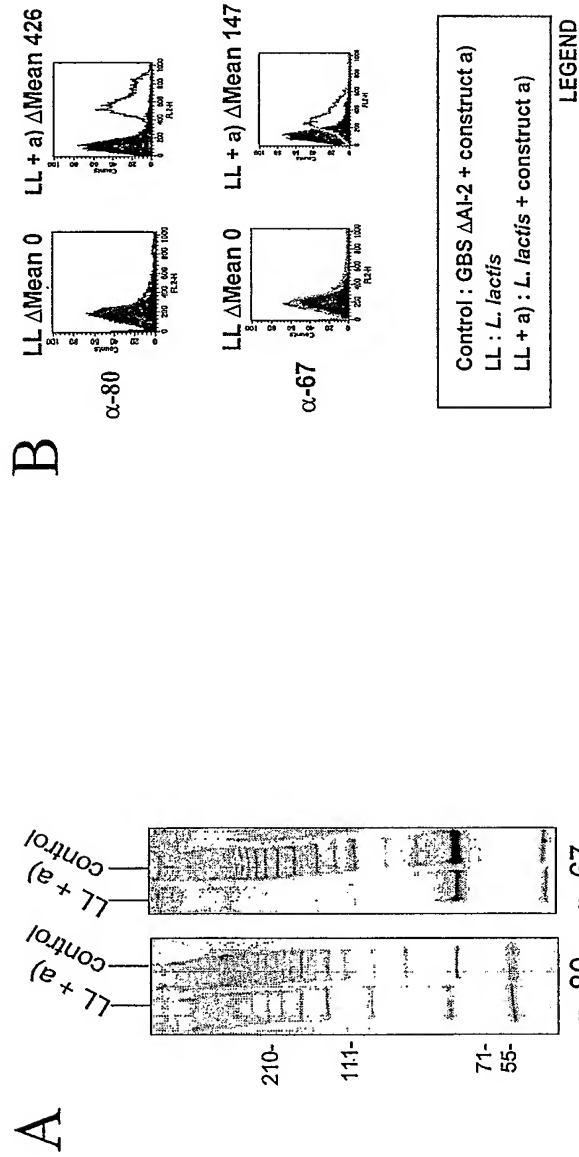
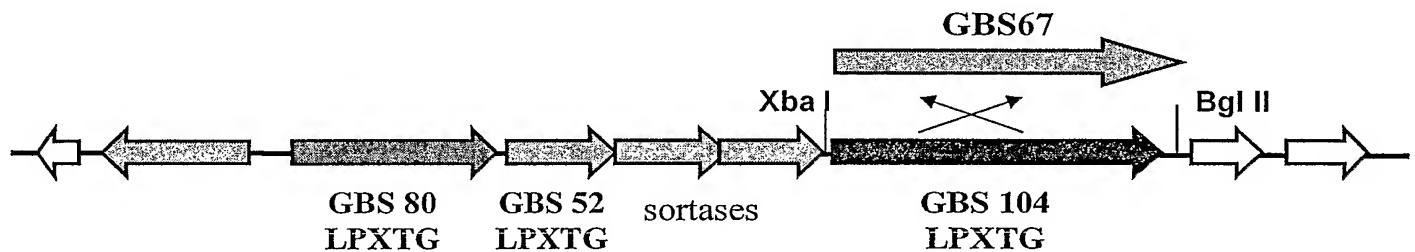


Figure 234 A

Introducing Heterologous Antigens into AI-1 pilus to Obtain Protection Across GBS Strains

1- Substitution of GBS 104 with GBS67 from Island II

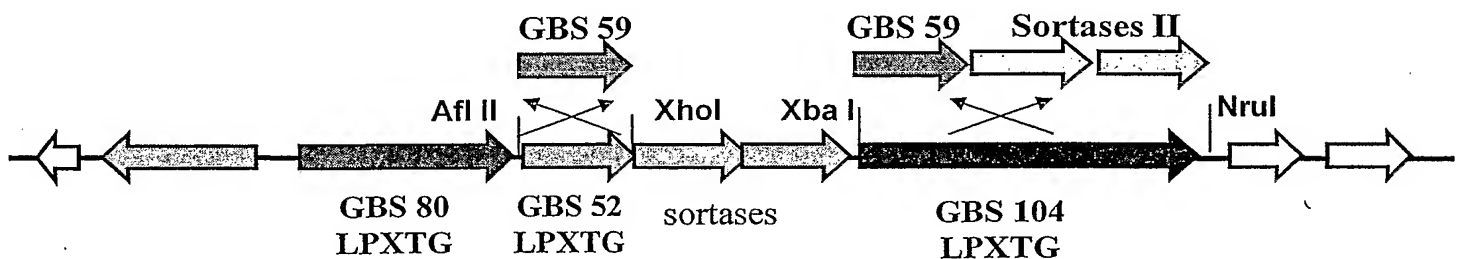


Oligo GBS67pAMXbafor AGTCAGTCTCTAGACGGCACAATAGGAGTTGTAAA

Oligo GBS67pAMBglrev CACCTGTCATAGATCTTAAGAATACTAAAGCGCATAA

2- Substitution of GBS52 or 104 with:

- GBS 59 alleles 515 or CJB
- GBS 59 allele CJB111 + sortases island II
- GBS 59 allele 515 + GBS 59 CJB111 + sortases island II



DETAILS:

a) Oligos to be used:

Oligo 59pAMAflfor1 AGTCAGTCCTTAAGCCGCATATTATTAATCATGTTG (allele 515)

Oligo 59pAMAflfor1 AGTCAGTCCTCGAGTTAACTTCCTCTGATTGACG (allele 515)

Oligo 59pAMAflfor2 AGTCAGTCCTTAAGAAGGAGTGGTGCTGCGGTAA (allele CJB111)

Oligo 59pAMXhorev2 AGTCAGTCCTCGAGTTAAGCTTCCTCTGATTGACG (allele CJB111)

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b) Oligos to be used:

Oligo GBS59XbaF CTAGTGATATATCTAGAGAAAAAG

Oligo Sort59NruR CTAGCTAGTCGCGACTTTTTCATTTTGGATTTCCCTTTC

Figure 234 B

3- Substitution of GBS104 with a fusion of GBS322-GBS67 to include GBS 322 into AI-1

- a) Construct 1: GBS67 complete sequence included
- b) Construct 2: Only part of GBS 67 was included (*deleted bold region*)

DETAILS:

a) Construct 1:

Legend:

Pink GBS322

Black GBS67

Black Bold: fragment of GBS67 eliminated in construct 2

Green PK motifs

Yellow E motifs

Red LPXTC

> gbs67-515 + 322

```
MRKYQKFSKILTLSLFCLSQIPLNTNVLGESTVPENGAKGKLVVKKTDQNKPLSKATFV
LKTTAHPESKIEKVTAELTGEATFDNLIPGDYTLSEETAPEGYKKTNQTWQVKVESNGKT
TIQNSGDKNSTIGQNQEELDKQYPPTGIYEDTKESYKLEHVKGSPNGKSEAKAVNPYSS
EGEHIREIPEGTLKRISVGDLAHNKYKIELTVSGKTIVKPVDKQKPLETDTTWARTVSEV
KADLVKQDNKSSYTVKYGDTLSEAMSIDMNVYLAKINNIADINLIYPETTLTYDQKSHTA
ISMKIETPATNAACOTTATVDLKTNDQVSVADOKVSLNTISEGIMTPEAATTIVSPMKTYSSAF
ALKSKEVLAEQAVSQAAANEQVSPAPVKSTSEVPAAKEEVKPTQTSVSQSTTVSPASVA
AETPAPVAKVAPVRTVAAPRVASVKVYTRK VETGASPEHVSAPAVPVTTTSPATDSKLOAT
EVKSPVPAQKAPTATPVAQPASTTNAAHPENAGLQPHVAAYKERVASTYGVNEESTYRAC
DRGDHGKGLAVDFIVGTNQAALGNKVAQYSTQNMAANNISYVIWQOKFYSN
INSYGPANTWINAMPDRGGVTANNDHVVHVSFNK DWWFVLDNSMS
MNNDGPNFQRHNKAKKAAEALGTAVKDILGANSNDRVALVTYGSDFDGRSVDVVKGFKE
DDKYYGLQTKFTIQTENYSHKQLTNNAEEIIRIPTEAPKAKWGSTTNGLTPEQQKEYYL
SKVGETFTMKAFMEADDILSQVNRNSQKIIVHVTGVPTRSYAINNFKLGASYESQFEQM
KKNGYLNKSNFLLTDPDDIKNGESYFLPLDSYQTQIISGNLQKLHYLDLNLNPKGI
IYRNGPVKEHGTPTKLYINSLKQKNYDIFNFGIDISGFRQVYNEEYKKNQDGTGFKLKEE
```

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AFKLS DGEITELMRSFSSKPEYYTPIVTSADTSNNEILSKIQQQFETILTKENSIVNGTI
EDPMGDKINLQLGNGQILQPSDYTLQGNDGSVMKDG IATGGPNNDGGILKGVKLEYIGNK
LYVRGLNLGEGQKVTLTYDVKLDDSFISNKFYDTN GR TTL NPK SEDPNTLRDFPIPI RD
VREYPTITIKNEKKLGEIEFIKVDKDNKKLLK GATFELQEFNEDYKLYLPIKNNNSKV
TGENGKISYKDLKDGKYQLIEAVSPEDY QKITNKPILTFEVVKGSIKNIIAVNKQISEYH
EEGDKHLITNTHIPPKGI K GILSFILIGGAMMSIAGGIYWKRYKKSSDMSIKK
D

Figure 234 C

b) Construct 2:

>gbs67-515 deleted+ 322

MRKYQKFSKILTLSLFCLSQIPLNTNVLGESTVPENGAKGKLVVKKTTDDQNKPLSKATFV
 LKTTAHPESKIEKVTAELTGEATFDNLIPGDYTLSEETAPEGYKKTNQWQVKVESNGKT
 TIQNSGDKNSTIGQNQEELDKQYPPTGIYEDTKESYKLEHVKGSPNGKSEAKAVNPYS
 SEGEHIREIPEGTLSEVVDLAHNKYKIETVSGKTIVKPVDPKQKPLETDTTW
 TARTVSEVKADLVKQDNKSSYTVKYGDTLSVISEAMSIDMNVLA KINNINLIYPETTLIV
 IYEQKSHATATSMKIETPATNAAGOTTATVBLKTNQVSVADQK VSLNTISEGMTPEAATT
 VSPMKTYSSAPALKSKEVLAQEQAVSQAAANEQVSPAPVKSITSEVPAAKEEVKPTQTS
 VSOSTTVGPAASVAETPAPVAKVAPVRTVAAPRVASVKVTPKVVETGASPEHVSAPAVE
 VTTTSPATDSKELQATEVKSVPVAQKAPTATVAPASTTNAVAHPENAGLOPHVAAYK
 EKVASTYGVNEFSTYRAGDPGDHGGKGLAVDFMGTNGALGNKYAQYSTONMAANNISY
 WQQKEYSNTNSIYGPANTWNAMPDRGCVTANHMDHVHVSFNKGESYFLPLDSYQQT
 IISGNLQKLHYLDLNLNYPKGTIYRNGPVKEHGTPTKLYINSLKQKNYDIFNFGIDISGRQ
 VYNEEYKKNQDGTGFKLKEEAFKLSDGEITELMRFSKPEYYTPIVTSADTSNNEILSKI
 QQQFETILTKENSIVNGTIEDPMGDKINLQLGNGQILQPSDYTLQGNDGSVMKDGATGG
 PNNDGGILKGVKLEYIGNKLYVRGLNLGEGQKVTLTYDVKLDDSFISNKFYDTNGRTTLN
 PKSEDPNTLRDFPIPKIRDVREYPTITIKNEKKLGEIEFIKVDKDNKLLKLGATFELQEFNE
 DYKLYLPIKNNNSKVVTGENGKISYKDLKDGKYQLIEAVSPEDYQKITNKPILTFEVVKG
 IKNIIAVNKQISEYHEEGDKHLITNTHIPPKGIPKIGKILSFILIGGAMMSIAGGIYWKRY
 KKSSDMSIKKD

Oligos to be used:**Oligo GBS67pAMXbafor (vedi operone)**

AGTCAGTCTCTAGACGGCACAAATAGGAGTTGTAA

XbaI

Oligo GBS67soe1rev

GCAAGCTGCTATGCTTTGTAACGGCTTTTGTGTCCACT

Oligo GBS322soe2for

GACAAACAAAAGCCGTTAATAACAGATACCAAGCTGGACAG

Oligo GBS322soe2rev1 (per costruito non delete in 67)

GAGTACGAAGACAACATCTTGTAAATCATACGTCGAACG

Oligo GBS322soe2rev2 (per costruito delete in 67)

TAAAAAGTAACTCTCCCCCTTGTAAATCATACGTCGAACG

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Oligo fine67soe3for1 (per costruito non deleto in 67)

GACGTATCAATTAAACAAAGATGTTGTCTTCGTACTCGAT

Oligo fine67soe3for2 (per costruito non deleto in 67)

GACGTATCAATTAAACAAAGGGGAGAGTTACTTTTTATTTC

Oligo GBS67pAMBglrev (vedi operone)

CACCTGTCATAGATCTTAAGAATAC TAAAGCCGATAA

BgIII

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Figure 234 D

PCR Soe1: GBS67pAMXbafor + GBS67soe1rev 727 bp

PCR Soe2 non del: GBS322soe2for + GBS322soe2rev1 1260 bp

PCR Soe2 del: GBS322soe2for + GBS322soe2rev2 1260 bp

PCR Soe3 non del: fine67soe3for1 + GBS67pAMBglrev 2061 bp

PCR Soe3 del: fine67soe3for2 + GBS67pAMBglrev 1419 bp

PCR Soe4 non del. PCR25: GBS67pAMXbafor + GBS67pAMBglrev 4000 bp

Substrato PCRSoe1, 2, 3 non del

PCR Soe4 del, PCR26: GBS67pAMXbafor + GBS67pAMBglrev 3312 bp

Substrato PCRSoe1, 2, 3 del

4- Substitution of GBS 52 with a fusion of GBS322-GBS52 to include GBS 322 into AI-1

(same legend as for GBS67 derivatives)

a) Construct 1: GBS52 complete sequence included

b) Construct 2: Only part of GBS 52 was included (*deleted bold region*)**DETAILS:**

a) Construct 1:

>GBS322-52 senza delezione di 52 (B) PCR 24

MKMNKKVLLTSTMAASLLSVASVQAQETDTETWTARTVSEVKADLMKODNK
 GSYTVKYGDITTSVISEAMSIDMNVLAKNINADINLIPETTLTVTYDQK
 SLTATSMKIETPATNAAGOTTATVDLKTNOVSVADQKVSINTISEGNTRE
 NATIIVSPMKTYSSAPALKSKEVLAGEQAVSQAAANEQVSPA
 PVKSIITSEVPAAKEELAKPTOTSVSQSTTVSPASVAAETPAPVAKVAPVRTVAAPRVAS
 MKVVTETKVETGASPEHVSAPAVPVTTTSPATDSKLOATEVKSVPAQKAP
 EATPVAQPASTTNAAHPENAGLOPHVAAYKEKVASTYGVNEFSTYRAG
 DPGDHGKGLAVDEIVGCTNQALGNKVAQYSTQNMANNISYVWQOKFYSN
 TNSIYGPAANTWNAMPDRCCVTANRHHVHVSEFK HQLTIVHLEARDIDRPNPQL
 EIAPKEGTPIEGVL YQLYQLKSTEDGDLAHWNSLTITELKKQAQQVFEA
 TTNQQGKATFNQLPDGIYYGLAVKAGEKNRNVSAFLVDLSEDKVIYPKII
 WSTGELDLLKVGVDGDTKKPLAGVVFELYEKNRTPIRVKNGVHSQDIDA
 AKHLETDSSGHIRISGLIHGDYVLKEIETQSGYQIGQAETAVTIEKSKTV

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TVTIENTKKVPTPKVPSRGGLEKQQAMALVIIGGILIALALRLLSKH
RKHQNKD

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Figure 234 E

b) Construct 2:

>GBS322-52 (A) PCR 23

MKMNNKKVLLTSTMAASLLSVASVQAQETDITWTARTVSEVKADLVKODNK
 SSYTVKYGDTLSVISEAMSIDMNNVLAKINNIADINLIYPETTLTVTYDOK
 SHTATSMKIETPATNAAGOTTATVDLKTNQVSVADOKVSLNTISEGMTPE
 AATTIVSPMKTYSSAPALKCKEVLAEQAVSQAAAANEQVSPA
 RVKSTSEVPAAKEEVKPTQTSVSQSTTVSPASVAAETPAVAKVAPVRTVAAPRVAS
 VKVVIKPKVETGASPEIIVSAPAVPVTTTSPATDSKLOATEVKSVPAQKAE
 IATPVAQPASTITNAVAHPENAGLOPHVAAYKEKVASTYGVNEFSTYRAC
 DPGDHGKGLAVDFIVGTNQAALGNKVAQYSTONMAANNISYVWQOKFYSN
 INSIYGPANTWNAMPDRGGVTANHYDHVHVSENK
 QGKATFNQLPDGIYYGLAVKAGEKNRNVSAFLVDLSEDKVIYPKII
 WSTGELDLLKVGVDGDTKKPLAGVVFELYEKNRTPIRVKNGVHSQDIDA
 AKHLETDSSGHIRISGLIHGDYVLKEIETQSGYQIGQAETAVTIEKSKTV
 TVTIENKKVPTPKVPSRGGLEKIGEQQAMALVIIGGILIALRLLSKH
 RKHQNKD

Oligos to be used:

Oligo 322Aflfor1

AGTCAGTCCTTAAGGATATTATAGTCTCGGACTA

Afl II

Oligo 52 soe1 forA

CAAGGAAAGGCTACATTTAACG

Oligo 52 soe1 forB

CATCAGTTGACGATTGTTTCATC

Oligo52 soe1revA

AAATGTAGCCTTTCCTTGTTTAAATGATACGTCGAACG

Oligo52 soe1revB

AACAATCGTCAACTGATGTTTAAATGATACGTCGAACG

Oligo 52Xhorev

AAGACCTCCTCGAGATGGCACTT

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Xho I

PCR Soe1A: Oligo 322Aflfor1+ Oligo 52 soe1 revA 1370 bp

PCR Soe2A: Oligo52 soe1forA + Oligo 52Xhorev 520 bp

PCR Soe3A: Oligo 322Aflfor1 + Oligo 52Xhorev 1846 bp (con PCR Soe1A + PCR Soe2A)
(PCR23)

PCR Soe1B: Oligo 322Aflfor1+ Oligo 52 soe1 revB 1370 bp

PCR Soe2B: Oligo52 soe2forB + Oligo 52Xhorev 742 bp

PCR Soe3B: Oligo 322Aflfor1 + Oligo 52Xhorev 2068 bp (con PCR Soe1B + PCR Soe2B)
(PCR 24)

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Figure 235

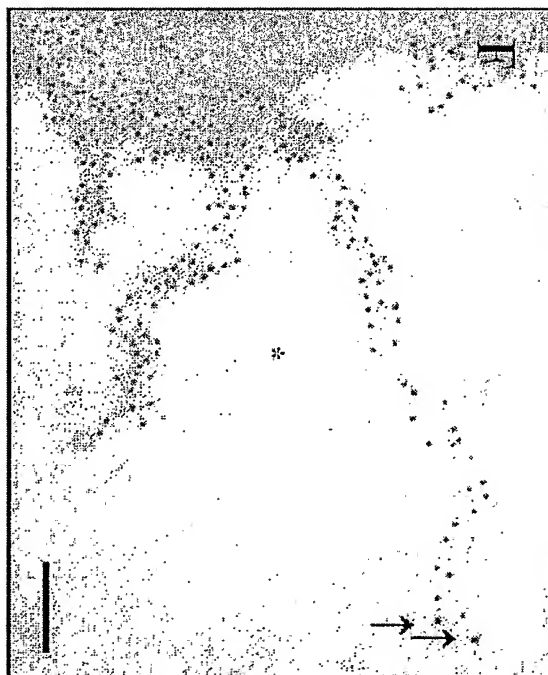


Figure 236



Strain variability - GBS67: 2 alleles

1 MRKYQKPSKILITLSLFLCLSQIPLNTNVLGSEVPENGAKGLVVKTTDDQ 50
|||||
1 NVLGESTVPENGAKGLVVKTTDDQ 25
51 NKPLSKATFVLKTAHPESKIEKVTAELTGEATFDNLIPGDYTLSEETAP 100
|||||
26 NKPLSKATFVLKTPSHSESKVEKVTTEVTGEATFDNLTPGDYTLSEETAP 75
101 EGYKKTQVQVKNVSGNGKTTIQNSGDRNSTIGNQOEELDKQYPTGIYE 150
|||||
76 EGYKKTQVQVKNVSGNGKTTIQNSDDKKSIIIEQOEELDKQYPLTGAYE 125
151 DTKEYSKLEHVKGSPVNGRSEAKVNPYSSEGEHIREIPEGTLSKRISSEV 200
|||||
126 DTKEYSKLEHVKNPSINGKLEAKVNPYSSEGEHIREIPEGTLSKRISSEV 175
201 GDLAHKKYIELTVSGKTIKVPYDQKPLDVVFLDNSNSMNDGNPQFOR 250
|||||
176 NDLDHKKYIELTVSGKSIKTIKNDKDEPLDVVFLDNSNSMKNNGKN... 222
251 HNKAKAAEALGTAVKDIILGANSNDRVALVTGSDIFDGRSDVVKGFKE 300
|||||
223 .NKAKKAGEAETIKDVLGANVENRAALVTGSDIFDGRVVKVKGFE 271
301 DDXYGLQTFQTYQENYSHKQLTNNABEILKRIPEAPKAKWGSTNGL 350
|||||
272 .DPYGLTSTFTQNDY SYKKFTNTAADIIKKIPKEAPEAKWGTSIGL 320
351 TPEQKRYLISKVGEFTMKAFWEADDDILSQVNRNSQKLIHVHVDGVPTR 400
|||||
321 TPEKREYDLSKVGEFTMKAFWEADTLLSSIQRSKRLIVHLDGVPTR 370
401 SYAINFKLGASVESQFQKKNNGYLNKSNFLLDKPEDIKNGESYFLF 450
|||||
371 SYAINSFVKGSTVANOFEIKGKGLDKNNYFLTDDEPKIKNGESYFLF 420

451 PLDSYQQTIIISGNLQKLHYLDLNLNYPKGTIYRNGPYKEHGTPTKLYINS 500
|||||
421 PLDSYQQTIIISGNLQKLHYLDLNLNYPKGTIYRNGPYKEHGTPTKLYINS 480
501 LKQKNYDIFNFGIDISGFRQVYNEEYKKNQDGTFOKLKEAFKLSDEGIT 550
|||||
471 LKQKNYDIFNFGIDISGFRQVYNEEYKKNQDGTFOKLKEAFKLSDEGIT 520
551 ELMRSFSKPEYYTPIVTSADTSNNNEILSKIQOQFETILTKEINSVNGTI 600
|||||
521 ELMRSFSKPEYYTPIVTSADTSNNNEILSKIQOQFETILTKEINSVNGTI 580
601 EDPMDKINLQNGQTLQPSDYTLQNGDGSVMKDGDIATGGPNDGGILK 650
|||||
571 EDPMDKINLHNGQTLQPSDYTLQNGDGSIMKDSIATGGPNDGGILK 620
651 GVKLEYIGNKLYVRGLNGLGEGQKVTLYDVKLDOSFISNKFYDTNGRTTL 700
|||||
621 GVKLEYIGNKLYVRGLNGLGEGQKVTLYDVKLDOSFISNKFYDTNGRTTL 670
701 NPKSEDPNLTLDFFPIKIRDVREYPTITIKNEKGLGEIEFTIKYDKONNKL 750
|||||
671 NPKSEDPNLTLDFFPIKIRDVREYPTITIKNEKGLGEIEFTIKYDKONNKL 720
751 LLKGATFELQEFNEDYKLYLPIKNNNSKVVTGENGKISYKDLKDGKYQLI 800
|||||
721 LLKGATFELQEFNEDYKLYLPIKNNNSKVVTGENGKISYKDLKDGKYQLI 770
801 EAVSPEDYQKITNKPILTTEVVKSGSIKNIIVANKQISEYHEEGDKHLITN 850
|||||
771 EAVSPEDYQKITNKPILTTEVVKSGSIKNIIVANKQISEYHEEGDKHLITN 820
851 THIPPKGIIIPMTGGKILSIFILIGAMMSIAGGIYIWKRYKKSSDMSIKK 900
|||||
821 THIPPKGI..... 828

Differences
between strains
2603 and H36B
(AA not matching/AA
total and % of homology)

114 / 828 (87,1%)

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Figure 237

Strain variability - GBS67 Allele I (2603)

Strain	Differences in comparison with 2603 (% of homology)
2603	-
18RS21	1/833 (99.9%)
CJB111	14/833 (98.3%)
515	2/833(99.8%)

Figure 238

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Strain variability - GBS67 Allele II (H36b)

Strain	Differences in comparison with H36b (% of homology)	FACS (α -67 from 2603)
H36B	-	444
1169	10/823 (98.8%)	443
090	9/316 Stop codon (8G to 7G)	0
CJB110	11/824 (98.7%)	245

Figure 239